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MIND
A QUARTERLY REVIEW
OF
PSYCHOLOGY AND PHILOSOPHY.

I.—PHILOSOPHY AND THE STUDY OF
PHILOSOPHERS.¹

BY D. G. RITCHIE.

THOSE who are engaged in the study of metaphysical philosophy often find themselves criticised by those who are working at the special sciences on the ground that, while the special sciences are continually adding to the sum of human knowledge and to man's power over nature, metaphysical philosophy makes no progress, but consists merely in a chaos of rival and contradictory speculations. And it is sometimes said that a clear proof of the barrenness of the pursuit is to be found in the attention devoted to the philosophers of the past, and even of a very remote past. The student of chemistry or biology is referred to the latest text-books; the student of metaphysics is sent back to Locke and Kant, to Descartes and Spinoza, or even to Plato and Aristotle. Some great scientific workers have themselves been imbued with the taste or passion for philosophy, and, like Huxley for instance, have been able to appreciate both the scientific and the philosophical work of Descartes or Aristotle. Some scientific men also recognise that in their own special departments a study of the history of scientific ideas is not an altogether irrelevant part of their work. Still it remains true, that the average scientific specialist feels convinced, or speaks as if he were convinced, of the futility of metaphysics, and regards the history of metaphysical variations and our occupation with it as a confirmation of his sceptical attitude.

¹ Presidential address delivered to the Aristotelian Society, 4th November, 1898.

Even those who are themselves busied with philosophical studies at times feel a certain doubt about their own position. The uncomfortable suspicion suggests itself that the great amount of writing and discussion actually going on upon philosophical subjects may perhaps after all be no real proof of the vitality of metaphysics ; for a very large and, as some may think, the most interesting and most valuable part of it is concerned with the careful exposition and criticism of the great philosophers. Philosophy, especially in Germany, long the chosen home of metaphysics, appears to have become very largely the study of its own history. The age of creation seems at an end, and our days have fallen in an "Alexandrian" period of commentators and critics. The biography of metaphysics is being so minutely written that we begin to fear that metaphysics itself must be dead, and that what we are studying and elaborating so anxiously is but a long and not altogether favourable obituary notice.

With such objections and doubts I propose to deal at present by asking two questions : (1) May not the nature of philosophy itself render inevitable this perpetual recurrence to the thought of the past ? and (2) may there not be special reasons in our own age why this historical interest should be predominant ? These questions are not new, and I do not profess to have anything very new to say upon them ; but they seem to me to be worth discussing afresh in a philosophical society which devotes no small part of its time to the study of past philosophy, and which by its very name professes a permanent debt to him whom several centuries called "the philosopher".

I do not think it accurate to describe the progress of the special sciences as consisting in a continuous accumulation of facts. An accumulation of facts is never science, but only the materials for science. Progress in the sciences consists in the substitution of more adequate concepts or categories for those by which we have hitherto attempted to unify and make intelligible to ourselves some parts or aspects of our experience. New facts are, indeed, the occasion for framing new concepts, and new concepts aid in the discovery of new facts ; but the accumulation of facts is not what is essential in scientific progress. To take a simple illustration, the fact that the sun is seen on one side of the sky in the morning and on the other side in the evening can be explained by the movement of the sun over the earth—the theory which we all use in our "common-sense" thinking and when we speak of "sunrise" and "sunset". The fact has been explained more adequately by the revolution of the earth on

its axis. So again, while the Darwinian theory of natural selection has incidentally led to the observation of many previously unnoticed facts about plants and animals, the theory itself is not an addition to our sum of facts but the substitution of a new definition of "species" for an old one. Indeed the old type of naturalist often collected many more facts (and specimens) than the new biologist, but his facts lay simply alongside of one another and were not held together by a continuous thread of theory.

Now, if the sciences, being, in Mr. Herbert Spencer's phrase, "partially unified knowledge," have their history marked by changes in their unifying concepts, much more must this be the case with philosophy, which attempts to reach complete unification of knowledge—I say "attempts to reach," for, just as Pythagoras took "lover of wisdom" and not "wise" for his title, so must we define philosophy, not as "completely unified knowledge," but as the effort or endeavour to reach it. A new fact may upset an accepted scientific theory; but not merely every new fact and every new event in the physical universe, but every new scientific theory (being a new event in the region of mind) is a new fact for philosophy, and the unifying and systematising concepts of philosophy must therefore be constantly subject to revision and modification. The main occupation of philosophy comes therefore to be the examination of those concepts that serve well enough for the provisional and very partial unifications of ordinary life, and of those concepts that serve well enough for the unification of the special sciences which deal with particular aspects of the world taken in abstraction from one another. Philosophy must primarily and at least be "a criticism of categories". The criticism consists in seeking to discover the relations of the various concepts, which are used uncritically in ordinary and in scientific thinking, to the ultimate data of experience (and what these are it is of course the concern of philosophy to discover, for common-sense and even the special sciences are alike content to accept as facts what are really unanalysed and unconscious theories); but beyond this primary task of philosophical criticism, it must, in the very effort to be thoroughgoing, proceed to consider the relation of these fundamental concepts to one another, and in doing this even a professedly critical philosophy must to some extent become constructive and speculative.

If we define philosophy (or metaphysics) as the theory of reality and its method as the analysis of experience, I do not think this can bring us to a conception of philosophy and of

its relation to the special sciences different from that which I have just adopted. The reality which philosophy attempts to understand must be *reality as a whole, but as knowable by us*. With the genuinely "unknowable" we can have nothing to do, and it is waste of words to talk about it. The reality we deal with must mean the same thing as experience—"experience," however, being taken in its very widest sense. Each of the special sciences takes up some aspect of reality. Each of them, therefore, deals with abstractions of varying degrees of abstractness and not with the whole concrete fact. It is with the totality, with the concrete, complex whole that philosophy attempts to deal. If we consider psychology as one of the special sciences, we must nevertheless recognise that it divides the field of experience with the other sciences in a different way from that in which they divide it between themselves. They are each concerned with some aspect of the content of experience, some with more abstract, others with less abstract, aspects; but all, even the least abstract of them, e.g., biology and sociology, leave out of consideration the fact that no reality exists for us at all save as an actual or possible object of consciousness. Psychology, on the other hand, makes the opposite abstraction. It is concerned with experience only on its subjective side, with the mental process as such, and is not directly concerned with this or that aspect of the content. Now, philosophy as the attempt to understand experience as a whole, to get at "the truth, the whole truth, and nothing but the truth," must inevitably take up an attitude of criticism towards the concepts which the various special sciences, including psychology, use in dealing with their problems. The thinking of experience as a whole remains the ideal for philosophy, an ideal which to different persons may seem more or less attainable; but the task which all philosophers must accept includes at least the criticism of the concepts used in the sciences and in ordinary thinking. The question which Kant came to formulate explicitly as the problem of what he called "Transcendental Logic," "How is knowledge possible?" is a question with which every serious philosophy deals in some way or other, however much the particular form and the particular results of the Kantian criticism be ignored or rejected or superseded. Only the thoroughgoing sceptic gives up the problem of how knowledge is possible, and in giving up this, he gives up metaphysics altogether and cultivates some other intellectual garden as best he may. Empiricists and idealists alike have their answer to the question, more or less dogmatic. They have some account to give of the concepts, such as thing

and quality, cause and effect, matter and mind, by the help of which the obscure chaos of uninterpreted sensation or feeling is arranged into the more or less orderly world of ordinary and scientific belief. Our ordinary or common-sense knowledge is full of tacit assumptions and presuppositions, some of which are retained, while others are discarded, by the special sciences. However much we try to avoid assumptions in speaking about the facts of consciousness, we cannot do so. The language we have received as part of our social inheritance is full of *idola fori*, and (unless we are barbarians) of *idola theatri* also. No avoidance of metaphysics, but only serious metaphysical effort enables us to detect these assumptions. "Enough metaphysics to get rid of metaphysical ideas" means in truth a very thorough metaphysical training, and, not merely a great deal of logical acuteness in unravelling complex concepts lurking under apparently simple words, but a knowledge of the history of thought in the past which has gone to form the intellectual ground on which we are standing, the intellectual atmosphere we breathe. If geology and chemical analysis have a scientific interest, apart from the practical benefits they may bring to the health and the wealth of nations, the study of the ideas of the past which have gone to mould our language and our beliefs has as great, if not a greater, intellectual interest and may have a very important, even though indirect, influence on the life of society, especially in the spheres of politics and religion, where unconscious and therefore uncriticised metaphysics is apt to cause serious mischief.

Undoubtedly there is a great attractiveness in the seeming freedom from the burden of historical tradition and from the dusty toil of historical research with which some philosophers, and among them some of the greatest, have attacked directly and single-handed the problems of knowledge and reality. Why, it may be urged, should we not always discuss our questions at first hand, with the freshness of a Socratic dialogue, instead of cumbering ourselves with the opinions of our predecessors, as Aristotle does in his *Metaphysics*, the book in which philosophy seems to lose its primitive direct outlook on experience and to begin to stiffen into scholasticism? Undoubtedly a great deal of the prevalent historical interest in philosophers of the past is not properly interest in philosophy; the two interests may even sometimes, as Green said, be in the inverse ratio.¹ Much of the study of Plato

¹ Cf. his edition of *Hume*, vol. i., p. 4 ("General Introduction," § 4). I suppose he was thinking primarily of G. H. Lewes' biographical *History*.

and Aristotle is scholarship. Much of the minute study of Kant has been correctly called "*Kantphilologie*". The humanist tradition in education, which has thrown a charm round the art and the literature and the life of periods that seem unprofitable subjects of study to those immersed in practical business or in the sciences that are directly connected with the things of industry and commerce—this humanist tradition is undoubtedly a chief support of the study of the old philosophers.

Apart, however, from any side interest in such a study, there are sufficiently strong reasons for it in the nature of philosophy itself. Bacon and Descartes, Locke and Kant, each in his turn, thought that he had shaken off the fetters of the past. Yet each in different degrees and ways shows that the ideas of the past do not bind us by mere external fetters, but have grown into the very structure of our minds. Bacon urges the study of facts without the assumption of philosophical theories; but his whole thinking about nature is pervaded by the assumption of the atomist doctrine, which, though unacknowledged, lies at the basis of his, as of most popular philosophy. Descartes, a far greater and more original philosophical thinker, succeeds in clearing his mind more completely of traditional concepts; and yet even he cannot escape from the system against which he rebels, and he fails to escape just because he turns away from the study and criticism of older theories. No sooner has he reached his solid basis, the one indubitable fact of self-consciousness, on which to rebuild the fabric of philosophy, than the scholastic notion of substance slips unrecognised into his thinking; and the self, the *ego*, becomes "a substance that thinks" set over against the substance that is extended. The dualism of popular philosophy, inherited from scholasticism and indirectly from Platonism, is exaggerated and stiffened in the philosophy which professed to start clear of all assumptions. Locke, who in his turn seeks to make an absolutely fresh start and to interrogate consciousness for himself, retains this same notion of substance, though he is clearly puzzled by its strange emptiness of meaning. What is still more significant, Locke like Bacon assumes the passivity of mind. It is a mirror or a blank sheet of paper on which things produce more or less perfect copies of themselves. Plato and Aristotle had used this picture of the writing tablet, but had used it in a more careful and conscious way, and a study of their psychology might have made Locke more cautious in his dealings with the metaphors of mental "images" and "impressions". Even Kant, who to escape the difficulties

in which Hume's clear-sightedness had placed Locke's empiricism, makes his "Copernican" change and tries the hypothesis of mind acting upon the material given to it—even Kant thinks he is introducing an absolutely new method into philosophy. Like Locke, though in a less degree, he tends to ignore his predecessors; and as a consequence he carries over into his theory of knowledge the mysterious "thing-in-itself," which seems to be a mixture of the scholastic "substance" with the Leibnizian "monad". He accepts, moreover, an absolute division between the intelligible and the phenomenal world, which is an inheritance from the Platonic doctrine that Aristotle had criticised in the *Metaphysics*, and that Plato himself had criticised in the *Parmenides*. I do not mean that the thought of the world would necessarily have gained if Bacon and Descartes, Locke and Kant, had devoted themselves to writing commentaries on Aristotle. There are times when a violent revolution seems to be needed in order to effect a reform, whether in thought or in politics or in religion; and the revolutionary leader cannot be expected to be always just to the past or to see his own work in correct historical perspective. I have referred to these four revolutionary thinkers simply as illustrations, to show how difficult or impossible it is to escape the *idola theatri*, while attempting to give an account of experience without a clear and explicit consciousness of the history of the metaphysical ideas which have become embedded like fossils in the language of ordinary life and the habits of ordinary thinking.

We may distinguish three main attitudes towards the doctrines of older philosophers. First, there is the attitude of submission to authority. Of this the most fully developed example is to be found in Scholasticism; but it was a habit of thought which had already shown itself in pre-Christian times in the Alexandrian period and even earlier. The reverence for the written word which contains the doctrine of the great teacher leads even the most gifted and original thinkers to put their ideas in the form of commentary on the sayings of the master. Discussion, however much freedom it may actually attain, takes the guise of rival interpretations of the same authority or of disagreement in the weight assigned to different authorities or to different elements of the same doctrine. It is a manner of philosophical discussion which is apt to arise wherever famous names have won a widespread veneration. Plato makes Socrates use it ironically when, instead of frankly asserting that Simonides the poet (and these old poets were the Greek "Bible") was

wrong in his opinion, he argues that the saying of Simonides must be otherwise interpreted or that the saying was wrongly ascribed to Simonides.¹ The same habit exists among ourselves, practised in all seriousness and not only with reference to the Bible. The discussion between sensationalist and intellectualist has sometimes taken the form of different interpretations of Locke, especially where Locke's *Essay* has become the traditional student's book. Idealist and realist, intuitionist and positivist have each been anxious to invoke the name of Kant; and opposing parties have sheltered themselves under the broad shadow of Hegel, distinguished as Right and Left and Centre, like the groups in a French Chamber of Deputies. Even those who protest against a dominant authoritative system often do so in the guise of a return to some favoured doctrine of the past. "Back to Kant" is one form of the revolt against the post-Kantian idealists.

The second attitude is that to which I have already referred as represented by Bacon and Descartes—revolt against authority, assertion of individual independence in thinking. Earlier philosophies are regarded as false. They are systems to be thrown aside. If they are dealt with, it is only that they may be refuted. But if they are dealt with at all, distinctions have soon to be made. They are not all false in the same degree. Bacon, e.g., has a kindlier feeling for the older Greek philosophers, "*quorum scripta perierunt*,"² than for Plato and Aristotle, whose works have floated down on the stream of time to encumber the intellectual powers of mankind. If some of the ideas of older philosophers are less to be condemned, they receive a certain relative approval. And so this attitude of protest and revolt can only maintain itself as a purely negative attitude towards the past by ignoring the study of it altogether. When such study asserts itself, as it is sure to do wherever humanist studies are not altogether supplanted by the mathematical and natural sciences, the negative attitude must give way to a recognition that the philosophical thinking of the past was a preparation for the better philosophy of the present. A Comist history of philosophy is indeed only a history of successive and conflicting forms of error; but these systems which are refuted one after the other are regarded as preparing the way for the clear-sighted, disillusioned positivism which has learnt to escape the metaphysical, as well as the theological, stage of thought. As we have seen, however, the metaphysical stage

¹ Cf. *Republic*, i., 331-335.

² Cf. *Novum Organum*, Praefatio.

can be escaped by no one except through the careful study of the growth of metaphysical concepts. We must trace the antecedents of our own ideas in the thought of the past in order to guard against the fallacies due to false philosophical systems. But to see the falsehood of a system clearly we must seek to understand it fully ; and we can only do so by studying it in the light of the social and intellectual environment in which it arose. When we do that, however, we begin to recognise in it a certain relative truth and value. A doctrine which is false, if accepted blindly and upon authority in our age, and which is easily refuted if judged by our canons of scientific criticism, is seen to have been in many respects sound and valid when taken in relation to the time and circumstances of its origin. We may not be prepared to accept the scholastic philosophy of St. Thomas Aquinas as the final word for us ; but we may recognise its great worth as an expression of the central ideas of the thirteenth century by a man of much shrewdness, common-sense and moderation. We cannot be Cartesians or Leibnizians now-a-days, and yet we may acknowledge the great debt of modern thought to Descartes and Leibniz more easily than was possible in last century, when Cartesianism and Wolfianism had become new scholastic systems in those universities where mediæval Aristotelianism had been supplanted. But, if we have reached this appreciative manner of regarding the great systems of a sufficiently remote past, we have surely got beyond the stage of looking on them simply as errors and the parents of errors against which we have to be on our guard. When the religious or the philosophical systems of the past are studied in what we have come to consider "the historical spirit," when criticism passes from merely refuting opinions to showing how and why these opinions came to be held, above all when the conception of development or evolution is extended from the natural world to the world of human thought, we have left behind the purely negative attitude to ideas that we no longer accept, and we come to see the long series of attempts to grapple with the central problems of knowledge and reality not as stray opinions with which we do not happen to agree, but as parts of one continuous movement in which our own thinking is itself included. The development of ideas is, indeed, in some respects more intricate and difficult to trace than development in the organic sphere. The genealogy of ideas (as of institutions) is more complex than that of animal or vegetable species. Still the leading threads can generally be detected ; and just because we are dealing with expressly

formulated ideas, the development of philosophical systems often gives the clearest indication of the relation in which successive stages of society stand to one another. In other words, the history of philosophy may often serve as a clue to guide us in the attempt to reach a philosophy of history. Plato and Aristotle help us to understand the Hellenic world, Thomas Aquinas to understand the middle ages and their relation to the ancient world, Descartes to understand the period of the Reformation, and so on.

It may be most convenient to discuss this third attitude towards the philosophers of the past—an attitude which I think is coming to be more and more adopted at the present day—in connection with the views of Hegel, who gave to it its most prominent expression and who may seem to many to have exaggerated it into falsehood. Every philosophy, Hegel admits, has been refuted. The very fact that a philosophy was the philosophy of some past age proves that it cannot be the truest system for a succeeding age. But it is also true that no philosophy has ever been refuted. "Every philosophy has been and still is necessary." There is but one philosophy manifesting itself in the succession of philosophical systems. The history of philosophy is thus an integral part of philosophy itself. It is philosophy taking its time.¹

What is usually quoted from Hegel is his saying that the sequence of philosophical systems is the same as that of the sequence of the categories in his *Logic*; and this is commonly supposed to be a dictum which refutes itself by its absurdity and preposterous conceit. And the dictum is contemptuously put aside even by historians of philosophy who have learnt Hegel's lesson very fully. Let us see first what Hegel really said and what he meant. Now what he says in his *Lectures on the History of Philosophy*² is that "on the whole (*im Ganzen*) the sequence of the philosophical systems is similar to the sequence of the categories". And again in one of the *Zusätze* to the *Encyklopädie*, § 86, he says: "the relation of the earlier to the later systems is in general (*im Allgemeinen*) much like the relation of the earlier to the later stages of the logical Idea, and is of this kind that the later contain the earlier sublated (*aufgehoben*, taken up, annulled and absorbed) in them". Hegel does not assert this as if he had got hold of a magical formula which saved him the trouble of studying history. He gives the

¹ Cf. *Encyklopädie*, § 86, Zusatz, 2; *Gesch. der Phil.*, Einleitung, A., § 3. (*Werke*, vi., pp. 166-168; xiii., p. 42 seq.)

² *Werke*, xiii., p. 48, ed. 1840. This particular sentence was not given in the edition of 1833.

reason why we should expect to find such a general correspondence between the logical and the historical order. The earlier systems are not, as used to be held and as was still held by many in his day, the depositaries of a higher and purer wisdom to which later generations must look back. He would indeed agree with Bacon about the reputed wisdom of the ancients : "*Antiquitas saeculi juventus mundi*". The earlier systems are the poorest, the emptiest, the most abstract. They give crude and one-sided answers to a vaguely put question about the underlying principle of things, and it is only through the conflict of opposing systems that the discussion of the problem gradually became more adequate. Thus Plato's philosophy is an attempt to get beyond the one-sided theories of Eleatics and Heracleiteans, while recognising the element of truth in each of these opposing systems. And it is Plato, too, who calls philosophy "dialectic," and comes in his great metaphysical dialogues to occupy himself precisely with what Hegel calls logical categories, while always keeping in view the historical controversies that had preceded him. Hegel sought to arrange the concepts of our ordinary and of our scientific thinking in their logical order, *i.e.*, to proceed from abstract to concrete, and to show how the dialectical antinomies into which our reason inevitably falls are no argument for complete philosophical agnosticism, but only prove the necessity of struggling to get beyond one-sided and superficial views of things and of trying to see them in the totality of their complex relationships to one another. He, therefore, expected to find traces of a similar dialectic movement in the long labour of the human mind throughout the ages. Nor are we to suppose, as the language of many of Hegel's critics might suggest, that he turned away like Descartes from the world of books and from the world of men and spun his complete system of logic out of his own inner consciousness and then sought with this fanciful cobweb to entrap the living universe. His early studies were chiefly devoted to Greek literature ; and it was undoubtedly in the history of Greek thought, as he read it, that he found a main reason for rearranging and supplementing and "objectifying" the categories which German philosophy had inherited from Kant. Hegel's *History of Philosophy* and his *Logic* may both be open to many criticisms ; but one criticism is quite unfair, *viz.*, that he brought a ready-made dogmatic system to the interpretation of preceding philosophies, enslaving facts to his logic. His *Logic* is in great part the outgrowth of his historical studies, and represents the inferences he had drawn

from history as he understood it. His actual procedure was inductive and experiential—as much as any real scientific procedure can be inductive and experiential.¹ Common-sense laughs at Hegel for saying that mere Being = Nothing. But he could find abundant historical evidence for the logical transition. If the Absolute be thought of as that of which we may not predict anything determinate, it becomes equivalent to Nothing. Oriental religions and philosophies and Neoplatonic conceptions of the Absolute confirm his view; and did not Eleatic philosophy end in the paradox of Gorgias who wrote : *περὶ φύσεως η τοῦ μὴ ὄντος?*

Hegel and some of his followers have been blamed for reading his system into Aristotle. The answer is given by Karl Michelet in his Preface to his Commentary on the *Ethics* : “*restituit tantum magistro suo quae ex ipso mutuatus est*”. Scholars have been scandalised by an unhappy mistranslation which Hegel made of a passage in Plato’s *Sophistes*. He mistranslated a particular sentence now and then, as many more special students of things Greek have done;²

¹ Rosenkranz, *Hegel's Leben*, pp. 10, 11, 14, supplies evidence that Hegel was studying not only Euripides and Sophocles, but Thucydides and Aristotle’s *Ethics* (in 1788) before he studied Kant’s *Critique of Pure Reason* (in 1789). The first traces of a tendency to philosophy are to be found in a little note-book which he began to keep in 1785, in which he collected definitions. The definition of logic (from whatever source derived) is certainly remarkable and significant : “*ein Inbegriff der Regeln des Denkens, abstrahirt aus der Geschichte der Menschheit*”—“a summary of the rules of thinking, abstracted from the history of mankind”. In 1788 (his first year at Tübingen University), in a dissertation “On some of the Advantages of Classical Studies,” he speaks of the reading of Greek and Latin authors as an appropriate preparation for the study of philosophy. We are exercised in the use of abstract conceptions and we find the germs of the philosophy of later times. “The many contradictions of the ancient philosophers, especially in their speculations on the practical part of philosophy, have at least lightened our trouble in finding the *via media* where the truth lies” (Rosenkranz, p. 27). By themselves such remarks might seem only the conventional apologetics of classical education, but in Hegel’s case they are undoubtedly the germs of his conception of the relation between philosophy and history. Ueberweg in his *History of Philosophy* (Engl. transl., vol. ii., p. 235) says that for his master’s degree (1790) Hegel wrote an essay “On the Study of the History of Philosophy”. This is not mentioned by Rosenkranz, who makes the mistake of supposing Hegel himself to have written the thesis *De limite officiorum humanorum seposita animorum immortalitate*, which he had to defend (see Karl v. Hegel’s edition of his father’s *Letters*, i., p. 16 note). It is quite clear that Hegel had laboriously studied history and Greek literature and philosophy before he had definitely arrived at his philosophical system, and certainly before he elaborated his *Logic*.

² E.g., Grote and Zeller in their astonishing interpretation of a passage in Aristotle’s will. (*Cf.* MIND, N.S., vol. vi., p. 565.)

and since his time the materials for the history of Greek philosophy have not only increased in bulk but have been more critically estimated and made more intelligible and accessible, so that much of what Hegel has to say on the subject is out of date. Nevertheless to Hegel our whole study of Greek thought owes an enormous debt; and his influence may be traced, not only in his acknowledged disciples like Michelet and Schwegler, not only among those who came under his influence and passed out of it, like Zeller, but among many who have never directly owned allegiance to him and are even unaware how much of his thinking they have inherited. That we now study Plato without Neoplatonic and Aristotle without scholastic glosses is largely due to Hegel's historical spirit in seeking always to understand a philosopher in the light of his own particular environment. His wonderful insight into the real significance of the Greek Sophists (an insight which anticipates Grote without Grote's exaggeration and one-sidedness) may be taken as a crucial instance of his objectivity of outlook, freedom from bias and historical sympathy. I do not mean to assert that Hegel's historical judgments are always equally sound. Much has been discovered about the origins of civilisation since his days; much of what he says about the Oriental world was based on imperfect knowledge and has lost its interest; he does not perhaps sufficiently appreciate the work of the Roman spirit. Reaction against the unhistorical rationalism of the eighteenth century¹ leads him to be somewhat unfair to the newer type of constructive historical criticism which Niebuhr represented in his time. Teutonism, as with many of his patriotic countrymen, bulks excessively, it may be, in his interpretation of the modern world. But when he is dealing with the Hellenic world, he is dealing with what he had studied carefully and in the ardour of his youth. And I think, if we were to try to characterise Hegel's philosophical position briefly, the least inaccurate statement would be to say, that the main stream of German philosophy, which descended from Kant though Fichte and Schelling, was met in Hegel's mind by another and equally powerful current coming straight from Plato and Aristotle as well as by

¹ Yet Hegel was on the whole less influenced by mere reaction than most of the intellectual leaders of his age. He never disowned the debt even of Germany to the French Revolution. With all his enthusiasm for the Greeks he would not assent to Cousin's exaltation of ancient above modern philosophy (*Cf. Briefe*, ii., p. 297). Cousin indeed, after telling of an indignant outburst of Hegel's about Catholic superstitions, remarks that Hegel had retained the prejudices of an eighteenth century *philosophe* (Art. in *Revue des deux mondes*, August, 1866).

smaller side currents coming indirectly from them also but through Neoplatonic and Christian mystics. It is not only from Kant's Antinomies and from the philosophical method of Fichte, but directly from Plato and Aristotle that Hegel derived his dialectic; and it was from them, far more than from any modern philosopher, that he derived his ideas of the relation between philosophy and its history. None of Hegel's modern predecessors, except Leibniz, had appreciated the thought of the past in a catholic spirit; and Leibniz treats previous philosophical systems rather eclectically, accepting suggestions from many diverse sources but not applying the categories of continuity and of organic growth to the history of human thought in the same thoroughgoing way in which he applied them to the phenomena of the physical world.

In his use of the word "dialectic" Hegel may be said to bring it back to Plato's signification, in order to escape the deadlock into which Kant had brought metaphysics. In Plato the suggestions for a dialectic movement in the history of thought are slight, but they are not wanting. I have referred already to the relation in which Plato expressly puts his own doctrine of ideas to Heracleiteanism on the one side and to Eleaticism on the other; and Plato evidently regarded the Pythagorean doctrine of numbers as a "propædeutic" for his own theory. But even in the simpler "conversations" of Socrates we may find the germs of what we may call a dialectical interpretation of the history of thought. The beginning of the *Republic* seems to me a clear example of that method of seeking to arrive at truth through the conflict and clash of preceding opinion which is common to Plato, Aristotle and Hegel. In the old man Cephalus and his son Polemarchus, both living in the stage of proverbial morality and submission to the sacred authority of the poets, in the rhetorical sophist Thrasymachus and Plato's brothers, Glaucon and Adeimantus, educated young Athenians who have come under the sway of the "Sophistic" rationalism but are dissatisfied with it—in these persons of the dialogue we have a series of types representing the development of Greek thought and the preparation for Socrates. Against the definitions of Justice which the first two give very superficial—we might say "sophistical"—arguments suffice. The contradictions easily show themselves. The thesis of Thrasymachus requires a harder struggle before it can be made to disclose its incoherence and refute itself—and, it is to be noted, the Socratic method is always dialectical, it is to make an inadequate theory when carried out into its

consequences lead to its own negation. Glaucon and Adeimantus have advanced farther; they have absorbed a subtler rationalism than Thrasymachus, but have recognised its inadequacy, and so they are fitted to stimulate and to follow the Platonic Socrates in his constructive idealism.

This dialectic method is formulated in very simple terms by Aristotle in the *Nicomachean Ethics* VII. 1, § 5, 1145, b 2, where he proposes in discussing the subject of *ἀκρασία* to follow his customary plan of stating current opinions (*τὰ φαινόμενα, τὰ λεγόμενα*), going through the objections which may be made to them (*διαπορίσαντας*), and so arriving at a solution (*λύσις*), which if possible shall recognise the element of truth in all, or at least in the most important of these opinions. Here we have the germ of the Scholastic method of *quaestio, objecta, conclusio*. But with Aristotle it has not yet stiffened into a formal and external method; and his solutions are not as cut and dried as those of theologians were expected to be. Many illustrations of this method of *ἀπορία* may be found in the Aristotelian writings, e.g., in the *Ethics* in the discussion of pleasure both in book vii. and in book x. One very conspicuous example on a large scale is supplied by the *Politics*. The whole of the second book is occupied with a criticism of Plato and other political theorists, and also of actual constitutions which had been held up as ideals.

In the *Metaphysics* we have the same method applied to "First Philosophy"—what we call "metaphysics". Aristotle thinks it necessary to go through the opinions of his predecessors. As he was the first to write (or inspire) a constitutional history,¹ so he was the first to write a history of philosophy, and he writes it as an integral and necessary part of his own metaphysical system. Schwegler indeed (in a note on *Met.* I. c. 3) holds that "the modern philosophical view [he means, of course, the Hegelian view] of the history of philosophy is entirely alien to Aristotle. He sees in it not a regular process of development going on with logical necessity, but regards it only from the pedagogic side, as a school

¹The recently discovered *Αθηναϊών πολιτεία*, which if not written by Aristotle must have been written for his use, is not merely a description of the Athenian constitution at some particular period, but an account of its successive forms. It is the first constitutional history ever written. The other 157 *πολιτείαι* were probably less elaborate documents. But this extensive survey of the actual political institutions of mankind, barbarian as well as Greek, shows how Aristotle like Hegel prepared himself for philosophy by historical study.

of exercise for thought."¹ Now, Aristotle's philosophising of the history of philosophy is certainly very rudimentary compared with Hegel's; but it seems to me a treatment of that history essentially the same in kind. The various opinions are not simply put alongside of one another in scholastic fashion, as if they were all utterances of persons on the same mental level and conscious of precisely the same problem. Aristotle expressly groups them according to the degree in which they realise the fourfold question that has, in his view, to be asked about reality. As Hegel sees the categories of his *Logic* gradually reached by the successive philosophical schools, so Aristotle finds his doctrine of the four causes bit by bit emerging from the progress of Greek thought. The earliest philosophers, when they asked themselves what is the underlying principle of things, were content to assign the "matter," that out of which the world of phenomena came and into which it returns. Empedocles felt the need of efficient causes, and "in a stammering way" expressed a principle of movement in his "love" and "strife," but he then went on to treat these as if they were simply material elements alongside of the other four. Anaxagoras made an epoch by assigning Reason or Intelligence as the efficient cause which produces order out of chaos, but he did not work out the principle in detail. Similarly, the Pythagoreans had advanced beyond the Ionians in assigning Number (or rather we should say "Figure," for Greek arithmetic was geometrical) as the principle of things; but they went on to treat this formal principle as if it were material, as if the universe were actually pieced together out of geometrical points, lines and figures. The Pythagorean "number" was the germ of the Platonic "ideas," which are a formal principle clearly recognised as such. And thus there only remains the final cause for Aristotle himself to put forward as his distinctive principle, though the germs of that also are to be found in earlier philosophy and especially in the Platonic. Now, whatever be thought of this particular interpretation of the history of Greek philosophy, it seems to me an interpretation of the same kind as that which Hegel applies to the history of all philosophy. Besides, we find Aristotle expressly recognising a logical necessity in the transition from

¹ Schwegler also thinks that the notion of a cycle in history excludes the idea of logical development. Aristotle certainly has the popular Greek notion of a cycle as a background to his thinking now and then; but it nowhere prevents him from taking a thoroughly scientific view of social or intellectual evolution. Contrast *Pol.* I. 2, with Plato's *Laws* III., 676-680.

one system to another. Thus in *Met.* I., 3, § 15, 984 a 18, he writes *αὐτὸ τὸ πρᾶγμα ὀδοποίησεν αὐτοῖς καὶ συνηνάγκασε ξητεῖν*, which amounts to recognising that the individual thinker is led on to a fresh stage by the logical necessities of the problem itself. And, again, a few lines farther on (§ 21, 984 b 9), *ὑπ' αὐτῆς τῆς ἀληθείας ἀναγκαζόμενοι τὴν ἔχομένην ἐξήγησαν ἀρχήν*, i.e., the principles follow one another in a necessary sequence (*τὴν ἔχομένην ἀρχήν*), and thought is inevitably led on (*ἀναγκαζόμενοι*) from one step to the next in logical order. In any philosophical interpretation of history purely chronological sequence must be put aside for logical sequence, philosophical history being something other than annals; and thus we find Aristotle placing Anaxagoras after Empedocles as the more advanced thinker, though younger in age (*Met.* I., 3, § 13, 984 a 12. In the context this is the only meaning that can be put upon *τοῖς δὲ ἔργοις ὑστερος* applied to Anaxagoras.)

Hegel's treatment of the history of philosophy is then no audacious eccentricity of his own, but a development of what his studies of Greek philosophy and what the example of Aristotle suggested to him. Moreover, we may say, in Aristotle's words, that he was led to it as the inevitable next step by truth herself, that is to say, by the special truth which it fell to his age to recognise and proclaim. In passing from Kant to Hegel we pass from the period which culminated in the French Revolution to the period of reconstruction after the abstract and essentially unhistorical rationalism of the eighteenth century.¹ Hegel's attitude to history is no isolated phenomenon. On his own principles of interpretation he is significant simply because in the department of philosophical thought he gave express formulation to ideas which were at work in his age. Goethe and Sir Walter Scott² are conspicuous representatives of that movement of thought and sentiment which has made the nineteenth century so different from the eighteenth. And if we contrast Auguste Comte with Voltaire, we have another example of the subtle intellectual revolution which has changed so many of the categories through which we apprehend the past. We often

¹ Though, as has been already pointed out (p. 13, note), Hegel was never carried off his feet by the wave of reaction, like the Romanticists, Mediaevalists, and other supporters of obscurantism and absolutism among his contemporaries.

² Hegel calls Scott "seichter Kopf" (Rosenkranz's *Leben*, p. 560), because of some of his moralisings about the French Revolution. But it was not by his *Life of Napoleon* that Scott helped to create the new historical spirit of studying institutions and ideas.

speak of our century as specially the century of progress in natural science. As mathematics gave a special colour or tone to the philosophical thinking of the seventeenth century, so biology seems to exercise the predominant intellectual influence in this century. And there is no doubt that the categories of "organism" and "evolution" now everywhere affect our language and make impossible to us many modes of thinking about human society which were customary and unquestioned a hundred years ago. But along with the progress of biological science we must certainly take account also of the influence exercised by scientific history and the scientific criticism of documents. This influence has worked entirely in the same direction with the biological, and has contributed a great part of what "Evolution" in its largest sense means. To regard human nature as a constant factor in all times and places, to which varying circumstances have simply to be added on, or to believe the history of mankind to be a degeneration from a primitive state of perfection—these are modes of thinking impossible to the educated man of our days. Yet they were an accepted part of the *Weltanschauung*, or picture of the universe, which our grandfathers had before their mental eyes. What considers itself "orthodox" belief and what considers itself "free-thinking"—except among the most ignorant and backward—have both taken on a different character from that which they had in last century or the earlier half of this. "The historical spirit" has penetrated even into the minds of journalists and popular preachers; it has become almost a commonplace of these "sophists" of our day. And a great deal of the best scientific work which is now being done in the world is in the endeavour to get a true understanding of the past of the human race.

Of this historical spirit Hegel's philosophy was one of the earliest prominent expressions, and Hegel's philosophy has in course of time come to contribute greatly to its growth and diffusion. Hegel sometimes speaks as if the philosopher only summed up a completed stage of life and feeling; but the truth in this does not justify the inference that the philosopher exercises no influence on his age. To give a philosophical expression to the new interest in history was to promote the passing of the historical spirit into the common possession of the educated world.

It may, however, be objected that to recognise the importance of history and to study the problems of religion, law, politics and philosophy in an historical spirit is not the same

thing as to hold that the stages of historical development correspond to the categories of any metaphysical system. Is it not? If the historical spirit comes to be consciously realised and grasped, then I think it necessarily implies something like what Hegel holds. If our interest in the past is more than the curiosity of the antiquarian, if we really mean what we say when we even put aside the old word "history"—which only signified at first investigation and collection of materials for science—and if in the current cant of the day we talk about "the development of institutions" and the "evolution of ideas," we must recognise that the institutions and ideas of the present are the outcome of the struggle and conflict that have gone before; and therefore in our study of the history of philosophy we must hope to see (however difficult we may find it to trace the connecting links through the complex and confused materials) not a mere series of capricious speculations of arbitrary individual intellects but a continuous discussion, a dialectic movement running through the ages. And, while we recognise clearly the occurrence of periods of decline and retrogression, so far as we recognise progress in philosophical thought, we must admit something of the nature of a logical process which proceeds from emptier and more abstract to fuller and more adequate concepts. If we have given up that fatal method of grouping all philosophers in all ages into two parties, Sensationalists and Intuitionists, like the Whigs and Tories of English political life, and if we find, as many do, some indication of a better understanding between different philosophical schools, and look upon them as complementary rather than rival opinions, then we have come to see that progress towards truth consists in a reconciliation of opposites and that the truest philosophical system would, as Aristotle held long before Hegel, take up all the others into it as elements of one whole.

It must indeed be frankly admitted that, while we have before us this ideal of a history of philosophy which should exhibit all the leading systems as the interconnected members of one organism or the stages in one process of growth (it does not matter which metaphor we use, provided that we take it from no less complex region than the organic), we must nevertheless be very careful that the details of historical fact are not distorted for the convenience of philosophical exposition. In other words, we must fully recognise the historical importance of tracing links of connexion and discovering the psychological sources of theories which may appear to be merely "accidental" and incapable of being

fitted into a scheme of logical development. The "contingent" element, the personality of the individual philosopher, his particular education and the various influences under which he came, cannot be safely neglected by the student of philosophical theories, however anxious he may be to keep to the main currents of thought and to escape the distracting toil of exploring side-channels and back waters.¹ Too much may, indeed, easily be made of this "contingent" element, as is done I think by those who would make a whole stage in the development of Plato's philosophy depend upon a supposed visit to Megara. On the other hand, when an historian or teacher of philosophy gives a complete account of Hume, based of course mainly on the *Treatise*, and then passes on to Kant and considers him as "answering Hume," accuracy is sacrificed to an appearance of precise dialectical opposition; and some misunderstanding of Kant has been the result of this not infrequent manner of exposition. In the first place, it might very well be said that Kant does not "answer" Hume. He appreciated Hume better than to treat him as Beattie and the other "answerers" do. But, in the second place, Kant had only read the *Essays*, and therefore he only knew of Hume's attack on the necessity of the causal nexus, and he was unaware of Hume's attempt to base mathematical truth upon experience.

The kind of commentary which we most need now upon the great philosophers of the past is not so much an exposition of their doctrines which shall make them more consistent with themselves than they really are, nor a merciless exposure of the inconsistencies and contradictions which can easily be found in systems from which we stand at a sufficient intellectual distance. Both these kinds of commentary are valuable in their way; but what is most necessary is a minute and accurate study of the sources from which a philosopher derived his ideas and of the particular circumstances which led to his laying stress on one rather than on another aspect of the truth as it appeared to him. To understand what the philosopher meant and in what order his ideas grew is the first thing; we may then go on to reconcile apparent contradictions or to detect new ones. But to understand a philosopher in this way implies that we study him in his historical environment. A "psychological" account of the genesis of a philosophical system, an exact intellectual biography of a

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philosopher, is not a different method of approaching the study of a philosopher from the philosophical history of which I have been speaking, but implies the same principle carried out into preciser detail. The minute and careful study of the great leaders of political history does not take us away from "the spirit of the age" or the tendencies of "the general mind," but teaches us more about them; for no man however "original" we may consider him can do anything great, unless he finds a suitable time and place for his special work, *i.e.*, unless in some way or other he represents and expresses his own age and nation. The old controversy about great men and their importance as a factor in history was admirably dealt with long ago in the Greek story which Plato tells at the beginning of the *Republic* (329 E, 330 A). Themistocles was taunted by a native of the insignificant island of Seriphos with owing his fame to the accident of his being an Athenian. "Neither would I," he answered, "being a Seriphan, nor would you being an Athenian, have attained greatness." In treating of men of action what we call the "contingent" element, *i.e.*, the element which we cannot yet and may never be able thoroughly to know and understand, bulks very largely; but, as Hegel points out, in the Introduction to his *Lectures*, in the history of philosophy the purely personal element does not come in to the same degree as it does in political history. The man who is making a nation may seem to choose sometimes rather arbitrarily, and perhaps from private motives, whether he will enlarge his country by quarrelling with his right hand or his left hand neighbour—though such purely personal motives are always a very trivial part of the explanation of great historical events. But the really serious philosopher does not make an arbitrary choice of his problems or of his point of view. He finds his problems determined for him by his age and by the special work of his predecessors; and his system grows in his mind under the influence of what he honestly takes to be logical necessity. In one sense the problems of philosophy are always the same, because they are simply a few leading questions about the ultimate nature of things; but the particular form which these problems take must vary from age to age, and the great philosophers who serve as landmarks in the course of thought are those who have grasped most clearly the special aspect which the problems have assumed for their own time. Those who have adhered to traditional ways of dealing with the questions or those whose type of thinking is so peculiar and independent as to have no affinity to what is seething in the minds of

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their contemporaries may be interesting as survivals or as precursors, but they do not help us to trace the main currents of human thought.

If it is objected that we may indeed detect the links of causal connexion in the rise and fall of particular opinions, but that that gives us no warrant for seeing any progress towards truth or any development of one eternal philosophy amid the changes and chances of mortal speculations—to this objection the only answer can be that all knowledge rests upon faith, in the sense that a faith in the ultimate rationality of the universe is the presupposition (however unacknowledged) of all serious science and of all strenuous conduct; and that the very task of philosophy, however difficult it may be, however unsatisfactory our best attainments, is to make this "faith in Providence" intelligible.¹ *Credo ut intelligam* is a double-edged motto. And if we can hope to find a meaning in the course of events in any part of the universe, most surely it ought to be in the movement of thought from one clear consciousness to another. A blind faith—and some of those who call attention to our dependence on faith seem to take for their motto *Credo ne intelligam*—may be more convenient for ecclesiastical authority, but can only be recognised by philosophy as a sceptical or ironical device for keeping science free from theological interference.

Another objection sometimes made to the Hegelian treatment of the history of philosophy is this, that on Hegel's own principles that method must now be superseded, and yet if Hegel was right his philosophy is the final truth. The argument makes a plausible dilemma; but both horns may be evaded. In the first place, I do not think that any one, however much he may feel the debt of the world to Hegel, will now be found to set up Hegel as a final authority, a new St. Thomas Aquinas, on whom we must be content to write commentaries. Hegel's "Encyclopaedic" method of exposition, like the mathematical form adopted by Spinoza, has injured his reputation and prevented him being rightly understood; but it was due to the influences of his surroundings. He lived in a time of audacious system-building. Moreover he was a professor of philosophy, and had been for seven years a tutor in private families and for eight years

¹ Cf. Hegel, *History of Philosophy*, Engl. transl., i., p. 85 (*Werke*, xiii., p. 49). "The great assumption that what has taken place in the world has done so in conformity with reason—which is what first gives the history of philosophy its true interest—is nothing else than trust in Providence, only in another form."

the headmaster of a school. If a university professor is apt to be dogmatic (and the German practice of *Dictaten* has something to answer for), a teacher of boys is bound to be so, and it was during these years of schoolmastering that Hegel elaborated his logic. We might remember too that he edited a newspaper for a year, and the journalist inevitably tends to assume the attributes of omniscience and infallibility. On Hegel's own principles his "finality" is only provisional; he sums up the thought of his time as he understands it. Is his point of view then no longer tenable? What is the system that has superseded his, and what is its attitude towards the history of philosophy? Great philosophies do not give place to one another like changes in the fashions. We are apt to think ourselves very new in our ideas compared with our predecessors of ten years ago; but periods in thought cannot always be counted so rapidly. It will probably take some time yet before Hegel's system is superseded, because it will not be superseded till it has been assimilated in the ordinary thinking of the educated world. Now that is a process which, though slow, has been going on very steadily and yet to a great extent unconsciously. And in the region of philosophy, the special characteristics of our time, the attention given on the one hand to minute psychological investigation, the endeavour to get a genetic account of the individual human mind, and on the other hand the labour expended on the history of institutions and of ideas—these two prevailing types of intellectual activity mean that the task which Hegel set to philosophy is being taken very seriously. It is only through more careful study of "subjective mind" and of "objective mind" that we can hope to reach a clearer outlook towards "absolute mind," which is the distant goal of our systematic thinking.

In this sense we may accept what Green said about Hegel's work: "It must all be done over again".¹ And to recur to my special subject—the study of past philosophy must be as minute, as scholarly, as possible, if we are to hope to understand the development of thought and to understand our own problems. This sets us an ideal of study which is terribly difficult and may seem unattainable. For we know how we lose sight of the forest in the trees, and how "philology" or minute scholarship and antiquarian research are apt to be hostile to that looking at things as a whole which philosophy requires. But we must make

¹I think he used these very words. The idea, at least, will be found in his review of Principal Caird's *Introduction to the Philosophy of Religion* (reprinted in Green's *Works*, vol. iii., p. 138 seq.).

the best of the inevitable. Here, as everywhere, we have an ideal of totality which we cannot complete and which nevertheless regulates our thinking at every step. We each of us must be content to take a great deal at second-hand. There is a sentence of Hegel's which even his most adverse critics may approve. "There are periods," he says, "with regard to which it is to be wished that others had read the works of the philosophers and provided us with extracts."¹ It is a suggestion that may be applied even to large parts of Hegel's own works and to most of what was produced by his contemporaries. Co-operation can certainly in this way be applied in philosophy, so far as it means a study of philosophers. And this is a matter in which, if I may say so, I think a society such as this and the philosophical journals which are a comparatively new feature in the English-speaking world may do great service to all students of philosophy. Whoever has made a minute study of any particular philosopher or of any particular philosophical book should put his results in such a shape as to save others from the drudgery he has himself gone through, and in such a shape as to form a trustworthy source of information for others. It is one of the saddest things to see laborious research largely wasted through the results not being put in a convenient and accessible form.

My subject has led me to dwell mainly on one aspect of philosophical thought—its continuity through different ages. But I should be giving a false conception of what I take to be the business of philosophical thinking, if I did not, in a word at least, refer to the other aspect, to what I may call the subjective or personal aspect of philosophy. Every one must have his own philosophy. We can only face the problems rightly if we face them for ourselves. And for that reason one of the dangers we have to guard against is the scholastic habit of becoming the mere expositors of any one master, however great. For that reason we should welcome the rebels and the doubters, and should value every opportunity of serious discussion with those who have grown up under different influences from those that have moulded ourselves, or who by a long labour of systematic thinking have reached an independent position from which they criticise our most cherished judgments about the philosophers of the past.

¹ *Werke*, xiii., p. 128.

II.—SUBJECTIVE COLOURS AND THE AFTER-IMAGE: THEIR SIGNIFICANCE FOR THE THEORY OF ATTENTION.

BY MARGARET FLOY WASHBURN.

SOME time ago, while studying what is called the "flight of colours" in after-images produced by white light, it occurred to the writer that it would be interesting to observe the effect on this colour series of an effort to alter the colours subjectively. The following paper is in part a description of the results obtained in a series of experiments bearing on this problem, and performed during the winter and spring of 1898. By "subjective colour sensation," or "subjective alteration of colour," is meant the effect of an attempt to call up in the retinal field of the closed eye, or with open eyes in a dark room, the sensation of a given colour. Prof. Kulpe notes in his *Outlines*, §§ 28, 2, and 74, 3, that it is possible in a dark room to call up at will patches of various colours, and that these central excitations sometimes approach the intensity of peripheral excitations. The problem here investigated relates simply to the influence of centrally excited sensations produced by such efforts upon the ordinary "ringing-off" of after-images.

It may be noticed at the outset that these experiments failed to show one hoped for result, which may perhaps yield itself to further investigation. During some of the earlier and less carefully controlled experiments, the effect of an effort to tinge the after-image with a certain colour seemed to be an intensification of the complementary colour; e.g., a stage which in the preceding experiment had been whitish or indefinite in colour flashed out into vivid green when the subject attempted to turn it red. The obvious suggestion was that this was a contrast-effect, and contrast of a new order, so far as the writer was aware, where the inducing colour was of purely central origin. The supposition was rendered more plausible by the recollection of an experience that occurred some years ago. While spending a few days in an unfamiliar house I noticed from time to

time a bit of vivid red drapery hanging on the wall of a room. On one occasion, entering the room hastily and glancing toward the red drapery, I saw a distinct patch of green on the white wall, and it was a second or two before I realised that the red cloth had been removed, and that what was actually seen was the white wall itself. I can think of no other explanation for this phenomenon, which was as unmistakable as it was unexpected, than the hypothesis that the green patch was a contrast colour, induced by the *expected*, centrally excited, or subjective red. Nor is this hypothesis really weakened by my failure to find analogous results in the experiments described below. In the case of a phenomenon which can occur only when favoured by very complex conditions, one well-marked positive instance should outweigh a number of failures. As a matter of fact, the apparent contrast-effect in these experiments turned out later to be due in all probability to alterations in the brightness of the stimulating light.

The image used as a basis for the following experiments was that produced in the retinal field of the closed eyes by prolonged white-light stimulation. The conditions were carefully regulated in accordance with those laid down by Helmholtz in the *Physiologische Optik*. The subjects sat in a room lighted by the upper half of a window whose lower half was screened. The eyes were fixed upon one point of the window-frame for twenty seconds, and were then closed and covered. Nothing but sky could be seen through the window, and careful note was always taken of the degree of illumination. The precaution was, of course, observed to free the eyes entirely between experiments from all traces of the previous image. The subjects experimented on were the writer (*W.*) and three students of psychology (*M.*, *O.* and *D.*). Of these only *W.* had general practice in psychological experiments. Fortunately, however, a reliable test could be had both of the degree of special practice attained by the subjects in the course of the research and of the influence of external sources of error. This test lay in the uniformity of the colour changes observed in the ordinary unmodified image. A wholly unpractised observer watching the course of an after-image for the first time reports chaotic results, and no two such observers agree as to the alterations in colour which occur. No results were taken account of from any subject until she was sufficiently practised to find the colour changes approximately uniform or affected only by such fluctuations as could be accounted for from external causes.

The first point to be determined was the sequence of colours to be expected from the ordinary image under these conditions. This was ascertained by a series of forty experiments made by *W.* at the outset of the research; the other subjects being then practised as stated above, till their accounts of the course of the image were consistent. Throughout the research at the beginning of each hour's work, and at intervals during its progress, two or three observations were taken of the ordinary unmodified image. The results obtained were almost perfectly uniform. After the momentary positive same-coloured image which appeared immediately on closing the eyes, there was an interval of five or six seconds, when a positive image came again. This image was at first rather fluctuating in colour, patches of red and green sometimes appearing on it, but in a second or two the panes of the window filled out with sky blue, the window bars remaining dark. This blue stage then passed into a stage of vivid green, the image sometimes but not always disappearing between the two stages. The green image usually disappeared and reappeared five or six times, growing paler, almost whitish, in colour towards the end. This neutralising of the green tint seemed to be due to the gradual emergence of the complementary colour, for the image next assumed a deep red tone, while the black bars became luminous and slightly greenish, the light appearing first as a crack through the length of each dark bar. Here, of course, was the transition from the positive to the negative image. The red stage, after undergoing several fluctuations, gave place to a deep blue image with yellowish bright lines, which lasted longer than any of the preceding, growing gradually darker until it became indistinguishable. By one of the subjects (*O.*) this final image was described as dark green, or sometimes as bluish green. No other important exceptions to this sequence were noticed with practised subjects, and it corresponds to that observed by Helmholtz under similar conditions. Experiments made with ten and fifteen seconds' exposure also confirm Helmholtz' statement, that after a certain limit has been passed the duration of the stimulus does not affect the course of the image. Variations in the intensity of the stimulating light did, however, influence the colour changes of the image. The sequence just described occurred when the sky was unclouded, or when it was covered with thin clouds and presented a uniformly white surface. When the illumination was much diminished, the sky uniformly and heavily clouded, the blue and green positive images were lacking.

The first image in the regular series was reddish white with dark lines. The colour gradually deepened, and the red negative image appeared, followed after several fluctuations by a dark blue negative image, very bright and distinct. The blue and green positive stages were regularly omitted when the sky was darkened; and the effect noted above, the brightened green which appeared several times when the subject tried to turn the image red, was very likely due to a brightening of the sky, as it was not observed in the later experiments, which were never made when the sky was in a condition to render the illumination variable in any marked degree.

When the subjects were sufficiently practised to be familiar with the ordinary course of the image and to find it regular, they were told before the experiment that they must by an effort of will turn the image red all the way through its course; that they must force back the other colour stages, or make them as brief as possible by fixing their attention on the idea of red. It was suggested that this could be brought about best by thinking hard of something red, at the same time trying to call up the colour in the retinal field; by fancying, for instance, that the window-panes were pools of blood. Corresponding suggestions of green and blue were made in other experiments; the subjects being told to think of green grass or blue sky. It soon became apparent that the carrying out of these suggestions was much easier for one of the subjects (*D.*) than for the other three. While *M.*, *W.* and *O.* have moderate visualising powers, *D.* is a good instance of the predominantly visual type, and was selected as a subject for that reason. In the case of the former, intense effort was needed to keep the attention fixed on the colour to be produced. This effort was manifest in a rigid position of the body, in frowning and biting the lips, and in a general expenditure of muscular energy, which became very fatiguing. The subjects often tried to reinforce the visual excitation by associated sound and muscular excitations, repeating internally the words 'red' or 'green' while trying to call up the colours. The strain of all this was found by the writer to be so great that the conditions of the experiment were altered, and instead of being required to visualise one colour throughout the whole course of the image, the subjects were asked in one set of experiments to turn the image red, blue, or green during the first half of its course, that is, up to the point where it passed from the positive to the negative stage; and in another set to wait until the image was entering upon the

negative stage, and then to try the subjective colour. In the case of the subject *D.* no such division of the experiments seemed necessary; much less effort was required to visualise the desired colour, simply thinking of some red, green or blue object being apparently sufficient.

The first set of results to be discussed are those obtained from the subjects *M.*, *W.* and *O.* Experiments where the effect of subjective red on the first half of the image was studied will be referred to as the *R. I.* experiments; those with subjective green in the first half as the *G. I.* experiments; those with subjective blue as the *B. I.*; while experiments with subjective red, green and blue in the second half will be designated as *R. II.*, *G. II.* and *B. II.* respectively.

The effect of subjective red in the *R. I.* experiments was manifested in three ways: (1) The blue positive image was observed to be strongly tinged with red. This effect was never visible on the green positive image, which resisted all efforts to turn it red. However (2), the dark lines on the green positive image were often made to assume a distinctly reddish tone; and (3) the blue and green stages were not infrequently much shorter than in the unmodified image, the effort to turn them red having apparently the effect of bringing on the red stage sooner than usual.

In the *G. I.* experiments the subjects were asked to make the image green at its first appearance, shortening or obliterating the blue stage; to hold the green as long as possible, and when the red stage appeared to force it back into green. It was found (1) that the blue image was tinged with green; (2) that its duration was distinctly shortened; (3) that the green image was noticeably brighter, and lasted longer than usual; and (4) that in some cases the green colour could be brought back after the image had turned red. The subject *O.*, to whom the final negative image looked dark green instead of dark blue, found that the effect of trying to bring back the green colour after the image had entered the red stage was to "hurry it on" into the final green negative image.

The chief results of the *B. I.* experiment were (1) that the blue positive stage was brighter and of longer duration than in the unmodified image; and (2) that blue patches appeared on the green image. *W.* also noticed during many of these experiments flashes and patches of blue light in the retinal field near the image.

In the *R. II.* experiments the effort was made to hold the red image as long as possible, and when the dark blue or

dark green colour began to appear to force it back into red. It was found (1) that the red image was brighter and lasted much longer than usual; (2) that the red colour would frequently be brought back even after the image had turned completely blue or green; and (3), by the subject *O.*, that when the image had become very dark and indistinct, and was on the point of disappearing, it could be made to look reddish.

The subjects were told in the *B. II.* experiments to shorten the red image and to bring on the dark blue negative stage as soon as possible. This result was obtained, and the blue negative image appeared brighter and lasted longer than usual. The subject *O.* found that under these conditions the final stage of the image was quite distinctly blue instead of green.

The attempt in the *G. II.* experiments was to shorten the red stage, and to turn the final blue negative image green, if possible. This latter result was of course most strongly marked in the case of the subject *O.*, who found the final image distinctly green. The dark blue negative image was, however, noticeably tinged with green for the other two observers. Another result was that the lines on both red and blue negative images appeared bright green in colour.

These results were not uniformly distributed throughout the experiments made in each class. Sometimes only one effect, *e.g.*, the brightening of the blue or green image, would be noticed. Sometimes several effects would appear in the same experiment. In from one to two per cent. of the experiments the effort to visualise produced no result at all. The high degree of strain put upon the attention subjected the results to variations arising from causes too slight and obscure to be traced or calculated, and a table showing the relative frequency of the effect described above reveals an irregular distribution from which no general principles can be deduced. The results themselves seem to fall, broadly speaking, into two classes, which, however, are not separated by any sharply defined line.

The first class comprises cases where the effect of visualising a certain colour was simply to intensify the traces of that colour already present in the retinal field. Central excitation of a given colour meant in these cases merely "calling attention" to that colour whenever it was actually present. In other words, it was an instance of what Prof. James calls "ideational preparation" for attention; the facilitation of attention to a given conscious contents by expectation. The results which fall into this class are: (1) the brightening

of a coloured image by central excitation of the same colour ; (2) the appearance of patches of the visualised colour on images of other colours. The writer found that in her own case these patches of red on the blue image or of blue on the green were not infrequently present when there was no attempt to visualise red or blue ; and interpreting the reports of the other subjects from her own experience, concludes that they were merely not noticed except when the subject had their colour specially in mind.

To the second class of results belong those cases (1) where the image of the visualised colour was brought on sooner than usual, the preceding stage being very considerably shortened ; and (2) where it was held longer than usual, the succeeding stage being as it were thrust back when it began to appear. Here we have apparently not merely an intensification of sensations already peripherally excited, but either the production by central excitation of a sensation equal in intensity to the peripherally excited image, or the checking of a peripheral by a central excitation. Really, however, this second class of results is merely an exaggerated instance of the same principle manifested in the first class. Here, too, in all probability, a peripheral excitation is strengthened by a central excitation, only the former is so faint that the resulting sensation seems to have been produced wholly by central excitation. There is always a tendency for the colour of the after-image to fluctuate between stages. Some time before the green stage, for instance, actually passes into the red stage, the red process assumes more or less prominence, and after the red stage has appeared there are still traces of the green process surviving. If the subject is visualising red, the nascent red excitation will be strengthened and made predominant ; if green, the fading traces of green will be held and intensified against the in-coming red.

In the case of the subject *D.* the effect of centrally excited colours on the course of the after-image was very striking. It amounted in many experiments to an entire transformation of the colour series. The subject's own report of one or two experiments will give the best idea of the extent of this effect. The ordinary sequence of colours in the "ringing-off" was for *D.* perfectly regular ; blue positive, green positive, red negative, dark blue negative. When in the next experiment, after an interval sufficient to remove all traces of the preceding image from the retinal field, the subject was asked to visualise red, the course of the colour changes was described as follows : First a red image with

dark lines lasting some time and growing lighter, interrupted once by a momentary green image. The lines then became bright, and the red negative image remained until the end of the series, traces of blue appearing from time to time. After the usual interval, the subject was asked to turn the image green in the next experiment, and the following colour sequence was obtained : A light green image with dark lines, the lines gradually becoming reddish ; then a red image with green lines, the lines spreading till the whole image was dark green, which it remained until its entire disappearance. Finally, where blue was visualised, the sequence of colours was : purple positive, light blue positive, light blue positive with greenish lines, very short red negative, vivid blue negative with yellow lines.

Such results as these show that for a person with unusually vivid powers of visual imagination, central excitation of visual centres, whose peripheral excitation by white light is so far weakened that the corresponding colour sensations have quite disappeared from the after-image, may reinforce their activity to such an extent as to make their sensations predominate in the image. We have here an extreme case of the effect of central reinforcement on weak peripheral excitation ; an effect which appears to a less marked degree in the results from the other subjects.

The most obvious theoretical consideration suggested by these phenomena is one which hardly needs to be dwelt on, since it has been recognised for so long and is supported by so many other lines of evidence. I mean the fact that perception and idea differ ultimately only in the manner of their production. The after-image, while of peripheral origin, stands in point of intensity midway between the two. Here, where the intensity of the peripheral process is reduced to a minimum, the resulting conscious state is seen to be practically identical in character with that produced by central excitation. But the chief interest of these experiments is their bearing on the theory of attention. The writer can state from her own introspection that for the three subjects of moderate visualising powers the effort to call up subjectively a certain colour meant simply an unusually intense effort to attend to that colour. That is, the central excitation of the visual centre was of the same order as that which occurs when one prepares to attend to certain conscious contents, *e.g.*, a certain overtone in a clang. Now if these experiments show anything, they show that the function of attention is positive as well as negative, intensifying as well as inhibiting ; and further that

its positive effects are due to the fact that, whenever we 'voluntarily' attend to any peripherally excited conscious contents, its peripheral excitation is reinforced by a central excitation, and its intensity is thereby actually increased. This effect of increased intensity would naturally be especially well-marked and unmistakable in the case of after-images, where the peripheral process is of but slight intensity. Nothing but an actual reinforcement by central excitation can account for the cutting short or lengthening at will of the colour stages in the after-image.

The evidence which these experiments afford of the function of central excitations in attention suggests a criticism of the reason for assuming the existence of a special 'attention centre' somewhere in the frontal lobes. Every function which the attention or apperception centre is supposed to perform can be explained on the hypothesis that the organ of attention is the cortex as a whole; or more definitely, the sum total of those brain centres which are connected functionally according to the laws of association and habit with the centre whose accompanying conscious process is the object attended to. Attention means central reinforcement of an excitation which may be in the first instance either central or peripheral in origin. And this central reinforcement comes not from a single supreme centre, but from associated centres of the same order as that in which the original excitation takes place. The influx of nervous energy which occurs in such a process of course involves increased intensity on the part of the resulting conscious state. It also involves diminished intensity in the rest of the field of consciousness. For the cortex as a whole represents a certain limited amount of nervous energy. When the currents of central excitation are determined to a given brain centre or group of centres, the intensity of nervous processes elsewhere is necessarily diminished, precisely as the electric lights in a trolley car grow dimmer when the car starts. Hence comes the phenomenon known as abstraction, which surely needs no such hypothesis as that of an inhibitory influence exerted by a special centre.

Although attention is thus seen to involve increased intensity on the part of the mental state attended to, it does not follow that the more intense a conscious state is, the greater the degree of attention to it. The increase in intensity must be of central, of associative origin. Otherwise an idea could never be attended to in the waking life, unless it assumed the intensity of an hallucination. It is not the

fact that a monotonous sound suddenly becomes louder than constitutes the fact of its being attended to; it is the sudden stirring up of associated ideas of its cause and significance, the 'what's that?'—not the increase of intensity due to the external stimulus, but that due to the influx of excitation from associated brain centres. Such, at any rate, is the view of attention suggested, rather than proved, by the experiments described above. The writer hopes that as an hypothesis it is at least worth considering, if only to be rejected upon other evidence.

III.—HEGEL'S TREATMENT OF THE CATEGORIES OF THE OBJECTIVE NOTION.¹

BY J. ELLIS McTAGGART.

LAST year I had the honour of laying before the Society an attempt at an explanation of Hegel's doctrine of the Subjective Notion. In continuing this to the Objective Notion, I should wish to take up the same position as before. The views I put before you I believe to be substantially the same as those of Hegel. But the point on which I would wish that discussion might turn is the intrinsic correctness of these views, and not their fidelity to the text.

The Objective Notion does not present so many difficulties as the preceding division. It is far less elaborately subdivided than the Subjective Notion, and (with the exception of the category of Chemism) it is much less influenced by attempts to make the development of the Logic correspond exactly to the divisions of some finite science. We shall, I think, find it necessary to criticise less, and be able to confine ourselves almost entirely to exposition.

The Objective Notion is the second division of the Doctrine of the Notion. It is divided into three sections, Mechanism, Chemism, and Teleology. The subdivisions of Chemism, which are only to be found in the *Greater Logic*, we may omit from consideration, for reasons which will be perceived when we come to that category. Mechanism is divided into Formal Mechanism, Mechanism with Affinity, and Absolute Mechanism. (These are the names given in the *Smaller Logic*. The names are different in the *Greater Logic*, and each division is again subdivided, but the argument is substantially the same.) Teleology again is subdivided into the Subjective End, the Means, and the Realised End. (These names are only found in the *Greater Logic*. In the *Smaller Logic* no names are given although the divisions are found.)

Two of these categories bear, it will be noticed, the names of physical sciences. This has the same significance as the use of the terms of formal logic in the Subjective Notion. The categories of Mechanism and Chemism do not apply

¹ Read before the Aristotelian Society.

only to the subject matter of Mechanics and Chemistry. Like all categories each of them is a predicate—more or less accurate—of all reality. Still less is it the case that an attempt is made by pure thought to deduce all the special characteristics of Mechanics and Chemistry as empirical sciences. What Hegel means by the names is that the most striking instances of the uses of the categories which he has called Mechanism and Chemism are to be found in the sciences of Mechanics and Chemistry. (We shall, I think, find reason to doubt this view about Chemism.) The use of the category is not confined to the science after which it is named, nor has the category anything to do with the empirical details of that science, but it is the form of pure thought which the science most naturally and usually employs.

Why is the part of the logic which we are considering called the Objective Notion? It is clearly meant as an antithesis to the title of Subjective Notion given to the previous division. Now we saw reason in our last paper to reject the view that Subjective here meant the inner as opposed to the outer. It must rather mean the particular, contingent, and capricious, as opposed to the universal, necessary, and reasonable. And we saw there that the Subjective Notion began by dealing with systems of classification which were contingent and capricious, and finally ended in a system of classification which was universal and necessary. This result is inherited by the next division of the Logic. All the systematisations made in the different stages of the Objective Notion claim to be, not classifications we *may* adopt, like those in the earlier stages of the Subjective Notion, but, on the contrary, classifications which express the whole nature of the reality, and which therefore we *must* adopt. It is on this account that it is entitled to the name of Objective.

In considering the transition from the Subjective to the Objective Notion, I should wish to refer to my paper on the Subjective Notion (*MIND*, 1897, p. 171). The conclusion there arrived at was that "things are doubly connected—by similarity and by causation. And it is obvious that a thing may be, and generally is, connected by the one tie to things very different from those to which it is connected by the other." I submitted that the dialectic "first takes up the relation of similarity, and works it out through the course of the Subjective Notion. Then, in the Objective Notion, it proceeds to work out the relation of determination—not going back arbitrarily to pick it up, but led on to it again by dialectical necessity, since the Subjective Notion, when fully

worked out, shows itself to have a defect which can only be remedied by the further development of the idea of determination."

We concluded that the final result reached in the Subjective Notion might be expressed as "the conception of a regular system of laws proceeding from the more general to the less general, embracing at the top the whole of reality in a single unity, and at the bottom accounting for every quality in every individual" (MIND, 1897, p. 357).

But now that the Subjective Notion is worked out to its highest point its inherent one-sidedness comes to the front—namely, its omission of connexion by determination. And this shows itself in an imperfection which becomes apparent in the highest form of the Subjective Notion. According to that form the highest type of knowledge is, Every A is either B or C. But such knowledge is necessarily incomplete. For of any given A, we know it is either B or C, but we do not know which it is. And yet it is certain that it *is* one of them, and it is no more the other than it is X or Y. How is this to be determined? All that the Subjective Notion can do for us is to class A₁ under the general head A, and *ex hypothesi* this cannot determine whether it is B or C. (If we put the position, as Hegel does, in the form of a disjunctive syllogism, the question will take the form, How do we get the minor premiss, A is not C?) We require a further determination of objects which their inner nature, as we are able at this stage of the dialectic to understand it, cannot give us. What can remain? It can only be determination from outside. And thus we are naturally led back at the end of the Subjective Notion to the conception of the reciprocal connexion of objects by determination—that very conception which we had temporarily ignored while dealing with the Subjective Notion. Thus the argument takes the course that, from the nature of the dialectic, might be anticipated. When we left one element of Reciprocity behind, and, in the Thesis of the Doctrine of the Notion, devoted ourselves to developing the other side only, we could predict that the incompleteness thus created would require us to develop the other element of Reciprocity in the Antithesis. And this is exactly what has happened. We are now on the point of beginning the Antithesis—namely, the Objective Notion, and the course of the argument has led us back to the ignored element of Reciprocity.

I am aware that this is not the way in which Hegel himself makes the transition from the Subjective to the Objective Notion (cp. *Encyclopædia*, section 193, and *Werke*, vol. v.,

p. 170.) But it appears necessary to differ from him on this point, for three reasons. In the first place, this view of the relation between the Subjective and Objective Notions seems the only one by which we can account for the difficult transition between Reciprocity and the Subjective Notion (cp. MIND, 1897, pp. 170-173). In the second place, Hegel's transition leaves the special and characteristic defect of the Subjective Notion—its powerlessness to determine which of the possible alternatives is real—unnoticed and untranscended. And, finally, Hegel's transition does not seem convincing in itself. The line of his argument appears to be that at the end of the Subjective Notion the mediation is merged, that this produces immediacy, and that this forms the transition to the Object. But how has the mediation been merged, so that we can pass to the immediate Object? Surely it has not been completely merged. The highest point of the Subjective Notion, as we saw, is found in the proposition A is either B or C. This may be said to be an immediate connexion between A on the one hand, and B and C on the other. But in any particular object A will be connected with B or C—not with both. A still requires mediation to determine whether, in this case, it is to be B or C, and it is rather the necessity of this mediation, as we have seen, and not the transcending of all mediation, which takes us on to the Objective Notion.

MECHANISM.

Hegel begins by remarking that the Object, which he takes to begin with as single, splits itself up "into distinct parts each of which is itself the totality" (*Enc.*, section 194). He accounts for this by means of the immediacy which he takes to be the special characteristic, at this stage, of the Objective Notion. But, even on my view of transition to the Objective Notion, the breaking up of the Object remains intelligible. At the end of the Subjective Notion we had, not indeed a blank unity, but a system of objects completely united, and united—this is the essential point—by their inner natures, and not by any merely external relation. Now when we pass from connexion by similarity to connexion by determination, we leave this union by inner nature behind us. If we look at things as they determine one another, we find them connected indeed, but, so far, connected only in an external way. They no longer form a single unity, but, on the contrary, an aggregate of objects, secondarily connected, no doubt, but primarily separated.

Of course this does not mean that the union by inner nature has been disproved or abolished. It is still there. But we have seen that, by itself, it cannot account for reality, and that it must be supplemented by the principle of connexion by determination. The objects which are determining one another have still their inner natures, as those have been expounded in the Subjective Notion. But we are now considering them as determining one another, and from that point of view they must be looked at as separate, since their relations are external. Thus the reality, which was previously looked at as primarily a whole, is now looked at as primarily a plurality, or, in Hegelian language, the totality breaks up into distinct parts.

The Objects are, then, at first taken as merely externally connected. Mechanics is the science which has the strongest tendency to treat the external relations of objects as entirely independent of their inner natures and, therefore, Hegel calls the first division of the Objective Notion by the name of Mechanism. Of this the first and most extreme form is

FORMAL MECHANISM.

The definition of this, as often happens in the dialectic, is identical with that of the larger division, of which it is the first subdivision. The two other subdivisions modify and correct the characteristic idea of Mechanism. But in Formal Mechanism it is given in its full extent. Each object enters into external relations with all others outside it, but these external relations are not affected by, and do not affect, the internal nature of the objects related.

A theory so extreme as this can only be accepted, with regard to objects of experience, as a methodological expedient. It may sometimes be convenient to consider objects, for some particular and limited purpose, *as if* their external relations had no influence on their inner nature, or their inner nature on their external relations. But experience teaches us, too plainly to be disregarded, that every external event that happens to any object of experience *does* effect its inner nature, and that, on the other hand, the external relations into which objects enter are largely determined by what the objects are.

Atoms, however, cannot be directly perceived, and in their case, therefore, empirical knowledge is powerless to check the errors of theory. And Atomism has got very near, sometimes, to the position of Formal Mechanism. It would not indeed assert that the inner nature of the atoms was entirely

a matter of indifference to their outer relations. They could not, for example, repel one another, except by some property of impenetrability. But it has been asserted that a change in their outer relations makes no change in their inner nature, and that the inner nature, on the other hand, has no influence in deciding which, of various possible relations, should be the one into which they actually should enter.

Hegel says in the *Greater Logic* (*Werke*, vol. v., p. 183) that this is the standpoint of Determinism. The name does not, at first sight, seem very appropriate, since one of the chief characteristics of the category is that the inner nature of the thing is not determined by its outer relations. But it is the determination of the outer relations to which Hegel refers here, and the significance of the name is negative. It refers to the absence of any *self-determination* on the part of the Object. If we ask why it is determined in this way rather than that, we can only attribute it to determination by another Object, which, in its turn, must be determined by a third, and so on indefinitely. In no case can the Object be self-determined, because in no case can the inner nature of the Object have anything to do with its determinations.

Such a determinism would lead to a morality not unlike that of the Stoics. For morality is in the long run concerned only with the inner states of people—though not of course only with the inner state of the individual moral agent. If every one was good and happy in himself, all external relations would be quite indifferent to morality, which only cares for external things in so far as they affect goodness or happiness. And if the inner nature of man, as of all other Objects, was independent of his external relations, then, whatever his circumstances, it would be in each man's power to be free, virtuous and happy. Such a view would of course tend to produce absolute indifference to the affairs of the outside world, and forms a striking contrast to the despairing Fatalism, which we shall see to be the ethical correlate of Mechanism with Affinity.

How does this category demonstrate its insufficiency? The important point for this is the fact that each of these Objects, which are only externally related, has not only an inner nature, but an inner nature determined in the way expounded in the Subjective Notion. It is this which breaks down the category and carries us on to the next, and I should like to call attention to this as an incidental confirmation of my view as to the relation of the Subjective and Objective Notions. For it fully explains and justifies the postponement of the consideration of connexion by determination until connexion

by similarity had been dealt with. It was not merely due, as might have been previously supposed, to the impossibility of considering two things at once. On the contrary, there was the positive and definite reason that, until the inner nature of objects had been developed, it would be impossible to pass out of the simplest and crudest form of connexion by determination.

In the earlier stages of Essence there would have been no contradiction in such a category as Mechanism. For there the Essence and the Appearance were conceived as realities which, though connected, possessed independent qualities. To determine the Appearance would not be to determine the Essence, and thus the inner nature of a thing could remain unaffected by its outer relations.

Even when the category of Reciprocity was reached, all we could have said of the assertion of the independence of the inner and the outer was not that it was false, but that it was unmeaning. For things, looked at under the category of Reciprocity, had no inner nature at all. It is true that they had those relations of Likeness and Unlikeness, out of which, as the Subjective Notion progressed, an inner nature developed. But at the end of Essence and the beginning of the Notion these relations also were purely external. They did not become an inner nature of the things that possessed them until the justification of Universal Judgments, in the course of the Subjective Notion, showed us that they were not accidents of Individuals, but, on the contrary, essential to the existence of those Individuals.

At the point which we have now reached, however, the matter is entirely different. Every Object, the Subjective Notion has taught us, must have an inner nature. And in the course of the Doctrine of Essence we learned that, if anything has an inner nature at all, it cannot be *merely* inner, that it, and the whole of it, must be manifested by the outside of the object—that is, by its external relations. And, conversely, no outer nature can be entirely outer. There can no more be anything in appearance which has not its root in Essence, than there can be anything in Essence which does not manifest itself in appearance.

And thus the category of Formal Mechanism contains a clear contradiction. The inner nature of an Object, it demands, shall be indifferent to its external relations of determination. These external relations belong somehow, and in some respects, to the Object, or there would be no meaning in calling them the external relations of that Object. They are not its inner nature. They must therefore be its

outer side, or part of its outer side. The category of Formal Mechanism, therefore, demands an Outer which has no relation to the Inner. And this is just what was proved in the Doctrine of Essence to be impossible.

If we wish to look at the question in a more concrete way, we may ask ourselves how much knowledge of the inner nature of an Object would be left us if we abstracted all knowledge of the effects which it produced on other Objects, and of the reactions by which it responded to the influences exerted on it from outside. The answer would certainly be that all knowledge of the inner nature would have vanished, and the conclusion to be drawn is that it is impossible to separate inner nature and outer relations.¹

Or, looking at the other side, we may ask what meaning could be given to the statement that a relation x was a relation of A and B, if it did not affect the inner nature of either, and therefore made no difference to either of them. Why in this case should we call x a relation of A and B rather than of C and D? As Lotze points out (*Logic*, section 338) a relation of things cannot be merely *between* them. It is *in* them, or it is nowhere.

If then the outer relations and inner nature of the object are not absolutely independent, how do they stand to one another? The *prima facie* assumption, since they at any rate profess to be different, is that they are two separate realities, acting on one another. The arguments given above, indeed, suggest that the connexion is closer than this, but Hegel prefers to approach the truth gradually, by stating and transcending this view of the interaction of separate realities. This forms the second subdivision of Mechanism, and he entitles it:—

MECHANISM WITH AFFINITY.

This is a somewhat perplexing title, nor is the original (*Differenter Mechanismus*) much clearer. The *Smaller Logic* is scarcely of any use here, owing to the very condensed way in which Hegel treats the subdivisions of Mechanism. By

¹ It may be objected that it is possible to form an idea of the inner nature of the universe, although it has nothing outside it with which it can enter into relations. But the universe is not a single Object, but a differentiated unity of parts, each of which is to be regarded as a centre of reality. It is the relations between these which constitute the inner nature of the universe. But the Objects which we are now considering are not systems of centres. They are single centres, and, except for their external relations, would be blank unities, and therefore non-entities.

the aid of the *Greater Logic*, however, it is possible to catch the meaning of the category. The outer relations and the inner nature influence one another, and the significance of the name appears to be that one Object is no longer as suitable as another to enter into any particular relations. Since the inner nature has some influence on the outer relations, it is only those Objects whose inner nature is of a particular kind which are capable of entering into particular relations.

To this category, Hegel says (*Werke*, vol. v., p. 192), belongs the idea of Fate—a blind Fate, conceived as crushing and ignoring the individuals who are in its power. This conception of the sacrifice of the individual to the order of things outside him could not have arisen in the category of Formal Mechanism, since there the interior of any Object was quite untouched by, and could not be sacrificed to, external circumstances. And in the next category, that of Absolute Mechanism, the opposition between inner and outer is replaced by the perception of their unity, and with it goes the idea of Fate as an alien and crushing power—to return again, on a higher level, in the category of Life, but to be again transcended by the category of Cognition. But, between Formal and Absolute Mechanism, our present category is precisely the proper sphere of Fate. For outside and inside are connected just so much that the former may act on the latter, just so little that there is no harmony between them. Fate has the individual Objects in its power, "*subjectos tanquam suos, viles tanquam alienos*".

The Stoicism which is the characteristic moral of Formal Mechanism necessarily leads on, if we do not refuse to look facts in the face, to the Fatalism which is characteristic of Mechanism with Affinity. It is all very well to say that every man has the power to be free, virtuous and happy under any circumstances. But the circumstances may include a badly trapped sewer which sends him out of the world, or a blow on the head which sends him into an asylum, or an education which leaves him with a complete ignorance of virtue, or a lively distaste for it. It is useless trying to escape from our circumstances. Such an "escape from Fate is itself the most unhappy of all Fates," as Hegel says. For the attempt at escape deprives us of our power over them, while it by no means deprives them of their power over us.

Fortunately this rather depressing category passes like the rest. If we consider more closely, we shall see that it is really impossible for the inner nature of an Object to be crushed. If we call this inner nature *xyz*, then one of two

alternatives follows. Either the Object has this inner nature, or it has not. If it has it, it has it, and the inner nature is not crushed, but, on the contrary, exists in its fulness. But if it has it not, then this *xyz* is not the Object's inner nature at all, and the Object is not in the least crushed or thwarted because it is not *xyz*. Why should it be *xyz*, if in point of fact it is not?

(Of course all this would not apply if we were speaking of self-conscious individuals—Objects who were in the fullest sense *for* self. In the case of any being with a power of conscious self-determination, the inner nature will include an ideal of some sort, and if outside circumstances prevent that ideal from being realised, then we can intelligibly speak of the inner nature being thwarted. For the inner nature in such a case is not merely a fact, but it is a fact which is a demand, and a demand can be real and yet unsatisfied. But we are not here dealing with self-conscious beings, and therefore the argument of the last paragraph will hold.)

How then can we get out of the contradiction in which this category involves us? We can be delivered from it by a line of argument which I have already more or less anticipated when criticising Formal Mechanism. There can, in fact, be no opposition between inner nature and outer relations, because there is no difference between them. All we mean by the inner nature of the Object is the general laws which determine the manner in which it does enter into relations. The inner nature of glass, for example, is just that it can scratch wax and cannot be scratched by it, that it cannot scratch diamonds, while diamonds can scratch it, and so on. If we try to think of any inner nature of the Object which is not expressed in the various actions and reactions, actual or possible, which the Object enters into, we absolutely fail.

And, while there is thus no inner nature which is not also outside relations, it is equally true that there are no outside relations which are not an expression of inner nature. This is often thrown into the background by the practical utility of considering one of the two terms in a relation as purely passive. But this is only a convenient inaccuracy. Everything which, as we say, "happens to" an Object, is really a manifestation of its inner nature. A *tabula rasa* is the stock example of something passive, and the active co-operation of the wax in the work of writing is not obvious on the surface. But when we consider how very different the result would have been if an attempt had been made to write on water, or on diamonds, it becomes evident that the

wax is really reacting as actively on the pencil, as gunpowder does on a match.

The result which we thus reach is not unlike the discovery in the Doctrine of Being, that Being-for-another is really Being-for-self. The inner nature of each Object is really identical with its relations to all other Objects, and we thus pass to the category of—

ABSOLUTE MECHANISM.

Since Hegel has correlated Formal Mechanism with Determinism, and Mechanism with Affinity with Fatalism, we might venture to carry on the process by comparing Absolute Mechanism with Spinoza's doctrine of Freedom. According to Spinoza, everything and everybody is free. For Freedom only consists in acting according to your nature, and there is, of course, no power in the universe (yourself included) which could possibly make you do anything not according to your nature.

This is doubtless true as far as it goes. But it does not go as far as Spinoza thinks, who endeavours to find in it a basis for resignation, if not for optimism. For this it is insufficient, for the reasons pointed out above. If we are to mean by Freedom anything which is of the least value to spirit, it must mean acting, not merely according to our nature, but according to our desires and, ultimately, our ideals. Supposing that I get toothache when I sit near a window, or feel jealous when I see my superiors, I shall certainly be acting according to my nature, but that will not make me feel that toothache and jealousy are desirable or ideal, and there will be a painfully true sense in which I can say that my freedom is interfered with by each of them. The only valuable freedom must be sought elsewhere—not in indeterminism indeed, but in self-realisation. But this comes later in the dialectic.

According to the Category of Absolute Mechanism, every Object is the centre of a system composed of all the other Objects which influence it. As everything in the universe stands in reciprocal connexion with everything else, it follows that each of these systems embraces the whole of reality, and that they are distinguished from one another by the fact that each has a different centre.

The central Object in each system is called by Hegel the Universal. Its best claim to that name seems to be that it alone in the system is to be looked on as self-determined. It is determined, in the first place, by all the surrounding

Objects. But, since these determinations only serve to bring out its own inner nature, it may be said to be self-determined. On the other hand, the surrounding Objects are looked at only as determining, not as determined at all, and so not self-determined. (Of course this only refers to the systems in which they are the determining Objects. Each of them has its own system, in which it is the central Object and therefore Universal.) The relations which connect the Universal with the Individuals are called by Hegel the Particular.

From another point of view the central Object may derive the title of Universal from the fact that it is the point of meeting of the other two terms, since only in that particular Object would the influence of the surrounding Objects produce just those actions and reactions. This is what Hegel seems to have been thinking of when he remarks that either the determining Objects or the relations could be taken as the Universal, as well as the determined Object. For we may consider the determining Objects as the bond of union between the central Object and the relations—since it is only these determinants which could enter into just those relations with that centre. Or we may consider the relations as the bond between the determining and the determined Objects, since those Objects could only be united by those relations. But this does not seem as deep a meaning for Universality as the one suggested in the last paragraph, and the successive transformation of the determining Objects and the relations into the Universal appears to have no influence on the general argument.

It should be noticed that the example of this category given by Hegel in both the *Greater* and the *Smaller Logic* is misleading. He there makes the State, or the Government, take the place of what I have called the central Object, while the citizens are the determining Objects. Now the State does not differ from the citizens as one citizen does from another, but is generically different. And both State and Government are, in their own nature, and not merely when specially taken as centres, realities of a more universal nature than individual citizens are. And thus the example would suggest that there are some Objects which are by their nature fitted to be the central Objects of systems, while others are assigned to the humbler position of determining Objects. But this, as we have seen, would be a mistake. For every possible Object is equally subject to Mechanism with Affinity, and we saw in the course of the deduction that every Object subject to Mechanism

with Affinity became the centre of a system of Absolute Mechanism.

Indeed we may say that the example, in the form which it takes in the *Smaller Logic*,¹ is not only misleading, but incorrect. For there he speaks of the State as the central Object. Now the State is not an Object distinct from the citizens, which can act and react on them, as each of them does on the rest. It is, as no one realised more thoroughly than Hegel, a unity of which the individual citizens are the parts. It is, no doubt, for Hegel, a real unity, not a mere aggregate, but on the other hand it is a unity which only exists in the citizens, and not side by side with them. Now this is a conception too advanced for Absolute Mechanism. For the conception of a system which is also a unity we shall have to wait for the category of Teleology, and conceive the State, not as an Object side by side with its citizens, but as the principle of their unity.

Hegel now passes from Absolute Mechanism to the next category. In his own words (*Enc.*, section 199) "the immediacy of existence, which the objects have in Absolute Mechanism, is implicitly negated by the fact that their independence is derived from, and due to, their connexions with each other, and therefore to their own want of stability". In other words, the whole nature of each Object lies in the relations between it and other Objects. But each of these relations does not belong exclusively, *ex hypothesi*, to the one Object, but it shares it with the others. The nature of wax consists, for example, partly in the fact that it is melted by fire. But this melting is just as much part of the nature of the fire. The fact is shared between the wax and the fire, and cannot be said to belong to one of them more than the other. It belongs to both of them jointly.

We must notice in passing that this would not be true of self-conscious beings. Our emotions and perceptions are the result of the action of outside Objects on us, but there is a very intelligible meaning in saying that my pain is more my quality than it is that of the stone which hit me. But

¹ The example, in the form in which it is given in the *Greater Logic* (*Werke*, vol. v., p. 197), can scarcely be called positively incorrect. For Hegel does not speak there, as he does in the *Smaller Logic* (*Enc.*, section 198), of both Staat and Regierung, but of Regierung only. And if we take Regierung, as Hegel probably did, to mean a separate class—the king, civil servants, etc.—it would form a separate Object by the side of the citizens, which could enter into relations of Mechanism with them. But the example would still be misleading, as suggesting an intrinsic difference between those Objects which were fitted to be central Objects, and those which were not.

this is because there is, in a self-conscious being, a principle of unity higher than anything which we have attained in the Object. In dealing with simple Objects we must, I think, admit Hegel's argument that the relation is no more the quality of one Object than of the other.

The only subject of which the relation can be predicated will be the system which these two Objects form. The qualities will belong to this system, and it will be the true unity. But again, two Objects cannot form a closed system, since all Objects in the universe are in natural connexion. Our system of two Objects will have relations with others, and will be merged with them, in the same way that the original Objects were merged in it—since the relations, which alone give individuality, are found to be common property, and so merge, instead of keeping distinct. The system in which all the Objects, and all their relations, are contained, becomes the reality—the only true Object, of which all the relations contained in the system are adjectives. The individual Objects disappear, and we find ourselves in the category of—

CHEMISM.

This is a very perplexing category, and I must confess that Hegel's treatment of it seems to me to require emendation. There is in it, Hegel says, an oscillation between a Neutral Object on the one hand, and, on the other hand, two extremes, separate, but connected and in a state of tension. I do not think that it is possible to doubt that Hegel intended to give us here, not an alternation of categories, but a category of alternation. It is not, according to him, that we alternately look on reality as a neutral object and as a tension of extremes, but that we hold throughout the whole of Chemism a position which asserts that reality itself continually passes from one of these forms to the other.

The passage from Absolute Mechanism to Chemism—this appears to be Hegel's meaning—gives us the neutral object. But the neutral object is undifferentiated, "it has sunk back to immediacy". It has therefore no true unity. So it splits up into the extremes. But the extremes, being "biased and strained,"—that is, in connexion with one another, fall back into the neutral object, and the process goes on *ad infinitum*.

To the validity of this line of argument I wish to suggest three objections. (a) In the first place, what right has Hegel to make a neutral object the result of the transition from

Absolute Mechanism? There was nothing in that transition to abolish differentiation. The various relations in which the differentiation consists, were by no means destroyed. All that was done was that they were lumped together, and attributed to a single logical subject—the system—instead of to the plurality of Objects which had been previously their logical subjects. This will not give us a neutral object, such as Hegel requires here.

(b) In the second place, if such a neutral object was reached, it would not split up into extremes, as Hegel wants it to do, but would vanish altogether. Such a neutral object could have nothing outside it, for it is to be coextensive with a mechanical system, and we have seen that every mechanical system is coextensive with the universe. And, again, the neutral object, being undifferentiated, could have nothing inside it. It would have therefore to be an absolutely blank reality. And the very first step in the Logic taught us that an absolutely blank reality was equivalent to absolute nothing. Consequently, even if the dialectic did get to the neutral object, it would never be able to pass from that to the connected extremes.

(c) But even supposing that this could be done, and the perpetual oscillation between neutral and extremes could be established, where is the contradiction in this that could take us on to the next category? It may be said that this continual oscillation is a False Infinite, and that a False Infinite is in itself a contradiction. But this, I think, is a mistake. There is nothing contradictory about a False Infinite except in those cases where the completion of the series is required—when of course there is an obvious contradiction. It was for this reason that the False Infinite involved a contradiction in the category of Being-for-another. A, by the hypothesis, was determined. But it was determined by B. So it could not be determined till B was determined. B was determined by C. Therefore, till C was determined, B could not be determined, nor, as a consequence, A. But C was determined by D, and so on *ad infinitum*. A, therefore, could not be determined till an endless series was ended. Therefore it could not be determined at all. But, by the hypothesis, it was determined, which gives a contradiction.

Here, however, the infinite series is not wanted to determine its first members. It can never be completed, but there is no contradiction if it is never completed. And therefore there is no ground for the transition to the next category.

I should venture to suggest a reconstruction of the category. The essential characteristic of it should be, I suggest, not the abolition of all differentiation, but, as appears in the transition from Absolute Mechanism, the reference of all the differentiation to a unity which is itself single and undifferentiated. The emphasis, you may say, is changed. In Absolute Mechanism we had, indeed, a unity of a sort, for we had a system. But the fundamental point was the plurality of objects, with their relations, and the unity was only derivative—an effect of the plurality. And in Chemism, on this theory, we shall have a differentiation of relations, but all springing out of, referred to, and dependent on a unity which is taken as devoid of plurality.

In this form the category, as we have seen, follows quite naturally from Absolute Mechanism. The latter had attempted to explain reality by the interaction of a plurality of Objects. But the relations, belonging as they did to the Objects jointly, so far from distinguishing one Object from another, rather merged them together, and as the Objects had no distinguishing qualities except their relations, there was nothing to keep them apart. They ran together, and were fused in one single Object, occupying the whole extent previously occupied by the system of Objects, and of this Object all the relations became an attribute.

This then would be the process by which we arrived at the new category. The inadequacy of such a point of view, and the necessity for transcending it, are obvious. It is quite impossible that a mere unity, without any plurality about it, should be able to account for a plurality. This would involve a spontaneous self-differentiation of the unity which Hegel, in agreement with common-sense, would hold to be impossible. If you put nothing but unity in, you can get nothing but unity out. The growth of the dialectic does not give an example of the contrary. In the first place the dialectic, though it develops, never differentiates itself (cp. MIND, 1897, p. 357). In the second place, as I have pointed out elsewhere (*Studies in the Hegelian Dialectic*), the real spring of the dialectic movement lies in the implicit concrete truth, which it proceeds to render explicit, and not in the already explicit abstraction from which it starts. Thus in the growth of the dialectic, as elsewhere, it remains true that something can never grow out of nothing. Now the category of Chemism involves an attempt to get something out of nothing. The unified plurality of the relations is to be accounted for by the bare unity of the base. And this would leave the plurality unaccounted for and illegitimate.

The undifferentiated unity of the base of the relations can thus no longer be maintained. At the same time, it is impossible to get rid of it by simply taking this base as plural. For then we should be back in the category of Absolute Mechanism, and this we have already seen to be unsatisfactory. It is clear that we can only get out of the difficulty by finding a new category which shall synthesise Mechanism and Chemism, and remove the defects of both.

This is the argument I should propose to substitute for Hegel's treatment of Chemism. It so far resembles his that the abstract and excessive plurality in Mechanism is replaced here by an equally abstract and excessive unity. But it is by no means the same category. It is true that there seems another resemblance in the way in which, in each case, the argument ends with an oscillation—in Hegel's view between the neutral object and the extremes, in my view, between the standpoints of Absolute Mechanism and Chemism. But this resemblance is deceptive, for there is a vital difference between an alternation of categories and a category of alternation. Now Hegel's view, as I said before, is a category of alternation—if we look at things by his category of Chemism we regard the things themselves as oscillating between different states. The alternation, in my view, on the contrary, is nothing but that state of perplexity and contradiction which always arises when a Thesis and Antithesis, which are contrary to one another, have been developed to their full extent, and the Synthesis, at the same time, has not yet presented itself for their reconciliation.¹ Each category, because of its inherent contradiction, leads to its contrary, and rest can only be found in the Synthesis.

With this change there disappears whatever appropriateness the name of Chemism originally possessed. Indeed, it seems probable to me that the associations of this name are responsible for Hegel's own unsatisfactory treatment of the category. Since the category before it was most appropriately named after Mechanics, and its successor was closely connected with the idea of End, it was tempting to carry the analogy one step farther, and name the middle category from Chemistry. And, having done this, Hegel, I venture to think, for once distorted the category to suit the name. The conceptions of the neutral object, and of the oscillation between the neutral object and the connected extremes, have

¹ Of course it is not the case that every Antithesis stands to its Thesis in the relation of a direct contrary. Indeed, a triad of this type is seldom found so near the end of the dialectic.

nothing, that I can see, to do with the course of the argument before or after them, but it is manifest at once that they are closely analogous to chemical processes.

I do not venture to rechristen the amended category. But I will point out that a good example of it might be found in Hegel's own exposition of the Hindu religion. Here all the multiplicity and differentiation of the world is referred to and accounted for by a unity so abstract as to explain nothing, and in reality to be nothing—for the difference between such a Pantheism as this and Bouddha's Atheism is infinitesimal. Such a blank unity is totally unable to explain the plurality, and accordingly is only really prominent in those moods of the worshipper when he can fix his entire attention on the unity of things, ignoring their differences. When the latter are to be taken into account, he has to regard some sort of difference as fundamental, thus going back to the category of Absolute Mechanism. And, because the unity declines to admit the reality of this difference, it is impotent to control it in any way. It is, as Hegel points out, for this reason that a religion which is on one side the most restrained and rigid monism, is on the other the wildest and most unrestrained polytheism.¹

We have seen, then, that our attempts to make either differentiation or unity fundamental by itself have broken down. Reality is a differentiated unity—or a unified plurality, and neither element can be deduced from the other. We must therefore adopt a theory of reality which puts both elements on the same level, and makes them both fundamental. Reality must be a unity differentiated into plurality, for which the differentiation and the plurality are as essential and necessary as the unity. Or it can be expressed from the other end—reality is a plurality combined into a unity, for which the combination and the unity are as essential and necessary as the plurality. This gives us the category which Hegel calls—

TELEOLOGY.

The advance in this category on the two which precede it does not lie in its recognising the existence of both unity and multiplicity. For Mechanism recognises, admittedly, a unity as well as a plurality, and I have endeavoured to show that Chemism recognises a plurality as well as a unity. The difference is that the two lower categories take, each of them,

¹ *Philosophy of Religion* (*Werke*, vol. xi., p. 380. Speirs' trans., vol. ii., p. 44).

one of these two ideas to be fundamental, and tries to account for the other from it, while Teleology recognises both of them to be equally fundamental.

In doing this Hegel attacks one of the strongest prejudices of the "non-speculative" mind. There are few things of which common sense feels more sure than that the same reality cannot be both One and Many. There may be a little differentiation in the One, a little unity in the Many. But that anything should be fundamentally and necessarily as much One as Many, as much Many as One, seems to it to be impossible. Against this prejudice of the natural man the dialectic continually directs its forces, but at this point more explicitly than ever before. We have here—even more distinctly than at the end of the Subjective Notion—the idea of a self-differentiating unity, by which is to be understood, as I have explained elsewhere,¹ not a blank unity which produces differentiations out of its inner nothingness, but a unity which, not through some external accident, but from inner necessity, is only to be found in a multiplicity which is as fundamental as itself. The term self-differentiating unity is rather misleading. The active participle suggests a logical if not a temporal process, and so leads us to suppose that the unity is the agent which produces the difference, and is therefore prior to it. This might to some extent be remedied if we were to realise that it would be just as true to say a self-unifying differentiation as a self-differentiating unity, though the suggestion of action would still remain inappropriate.

This doctrine is interesting as being one which has, mainly through the influence of Hegel, penetrated from metaphysics to everyday life. Common sense is not quite so certain as it used to be, that the One cannot also be the Many. The idea of a self-differentiating unity, generally under the more picturesque name of an organic unity, has worked itself into a place among the furniture of the average mind, and is perhaps being used with rather reckless freedom. Still it must be regarded as one of the most valuable of the presents which metaphysics has made to an ungrateful world.

Hegel departs considerably from the common usage in the meaning which he gives to Teleology, and still more with End and Means, which with him signify respectively the aspects of unity and plurality. What we generally mean by Teleology is what Hegel calls "finite and outward design," in which some independently existing object is used by some

¹ MIND, 1897, p. 356.

self-conscious being as a means for carrying out some plan which he has conceived. In "outward design" the Means and the End can exist independently—for the End can exist as a purpose in the mind of the agent, even if there are no possible Means to carry it out; while the objects which are used as Means do not derive their entire existence from that use, but existed before the End was formed, and would still have existed if it had never been formed.

It is clear that this is entirely different from the idea of Teleology at which the dialectic has now arrived, in which the End has no existence, and indeed no meaning at all, except in so far as it is manifested in the Means, while the Means are equally devoid of meaning and existence except in so far as they carry out the End. Hegel's Teleology corresponds, as he remarks himself, to Kant's idea of Inner Design; the best example of which is the unity in multiplicity of an organic being.

The use by Hegel of the words End and Means here seems to me very unfortunate. For, in ordinary language, the cardinal point in the significance of these terms is that the Means, as Means, exist only for the sake of the End, while the End exists for its own sake. The End has ultimate value, the Means only derivative value. Now there is nothing of this sort in the Hegelian use of the words. The whole point of the category is, as we have seen, that the plurality, which he calls the Means, is just as fundamental and important as the unity, which he calls the End. But the contrary is almost irresistibly suggested by the associations of the words, and even Hegel himself seems sometimes to forget in what a different sense from the common one he is professing to use them. To his use of the word Teleology there seems much less objection.

It is to be noted that, using the words in Hegel's sense, there can be no such thing as an unrealised End, or inadequate Means. An End only exists at all in so far as it is the unity which unites the Means—*i.e.*, which is realised by them, and, conversely, the Means only exist in so far as they are unified by, and express, the End, and can therefore offer no resistance to its realisation.

At the same time we must notice that with this use of the words the conception of a realised End loses altogether that implication of *value* which it has when the words are used in their ordinary significance. In the latter case, the conception of a realised End involves value, because, in the first place, it has a distinct meaning. An End entertained is not necessarily realised, and the realisation brings in a

fresh element. And that fresh element is the harmony between the purposes of a self-conscious being on the one hand, and the surrounding reality on the other. This certainly involves pleasure, and, if pleasure be taken as the good, or if the End was in itself moral, it also involves good. And thus, with "finite and outward" Ends, their realisation takes us into the world of values, since, at the lowest, the realisation implies that some sentient being has got what he wanted.

But with Ends, in the Hegelian sense of the word, it is quite different. In the first place, to say that an End is realised is now, as was explained above, a mere tautology. And, in the second place, an End, in this sense, is only the inner unity of existence. It has no necessary relation to any conscious being, and, consequently, no implication of value, which is an unmeaning term apart from consciousness.

Is there one End in the universe or more? Are we to consider all reality as a single system held together by a single End, or is there a plurality of Ends—embracing, of course, a still greater plurality of Means? Hegel does not make this point clear. It seems certain to me, however, that we must regard all reality as forming a single system with a single End. In the first place, if there was more than one End they would be simply juxtaposed, without any connexion, since under this category a plurality can only be united as Means to an End. But juxtaposition without connexion is a standpoint which the dialectic has long ago transcended.

The same view is imposed on us by the manner in which the idea of End has been reached. Each system of Absolute Mechanism was transformed into a system of Chemism, and that, again, into a Teleological system. It would seem, then, as if there ought to be a Teleological system for each system of Absolute Mechanism, of which there were many. But it must be remembered that each of these Mechanical systems comprised just the same Objects—since each of them extended over the whole universe. The only difference between them lay in the fact that each of them took a different Object for its centre. Now the centre of union of a Teleological system is not one of the Objects which form the system, but the unity behind it which Hegel calls the End. And therefore all these systems of Ends and Means will turn out to be the same system. For the Means are the same in each case—since each system has the plurality of the whole universe as its Means—and the same Means cannot possibly have two different Ends. If we call the Means x , and the Ends A

and B, we see that, A and B being different, x cannot manifest A by the same qualities with which it manifests B. There must therefore be some part of x which does not manifest A, and some part which does not manifest B. That is to say, neither A nor B could be the true End of x , since neither of them would correspond to the whole of it, and the part of x which did not correspond to either End would not be unified by it.

Only one End therefore can be capable of uniting as its Means all the plurality of the universe, and as no system can stop short of embracing the whole universe, we must regard the whole of reality as forming a single system, with a single End.

The conception of End—in the Hegelian sense—may perhaps be profitably compared to Lotze's conception of the unity which he calls M, by which all the particular Things in the world are united. At first sight, indeed, it might seem as if this M could be better compared with a system in Absolute Mechanism. It is easy to take it as if it were altogether secondary to the particular Things, and as if its only function was to pass on to one Thing the impulses received from another. But we must remember, first, that without M the Things would have no relations, and be absolutely isolated—that is, would not exist at all. Therefore it is absolutely essential to the Things, and not secondary. And, secondly, Lotze asks us to "admit the supposition that the susceptibility, which we had to recognise in every finite Being—a susceptibility in virtue of which it does not experience changes without maintaining itself against them by reaction—that this belongs also to the one, the truly existing M" (*Metaphysic*, section 70). Now this gives M a nature of its own. No doubt this nature is only expressible in Things, but still it is not a mere consequence of Things. The unity is as essential a side of the truth as the plurality. And this is very like the category of End. (I may be permitted to remark in passing that this ascription of a definite nature to M seems absolutely incompatible with the view, sometimes held, that Lotze can be correctly described as a Monadist.)

SUBJECTIVE END.

The full unity between Means and End, however, is not attained till we reach the last division of Teleology. At first they are regarded as of equal importance, indeed, and as closely united, but yet as being still separate entities in the sense that each has a nature of its own, though it could

not exist except in conjunction with the other. This view dominates the first two subdivisions of Teleology, the first of which, called by Hegel the Subjective End, regards the Means as possessing no definite quality of their own except that they are a plurality. One Object is as good as another in any place, or for the manifestation of any particular part of the End. If in an Object A there is manifested the End in the shape of x , that does not mean that there is any special fitness in A to manifest x . B, or any other Object, would have done quite as well. All that the Objects are wanted for, is to provide a plurality. All the content is in the End alone.

This is naturally the first form the category would take. For the immediate cause of the breaking down of the category of Chemism was that it was impossible to get the plurality out of unity. So that it was natural at first to look elsewhere only for the mere element of plurality, and to think that that once given, the unity could supply all the rest.

The contradiction involved in this category is not hard to discover. For, while it asserts the Means to have separate natures, apart from that End which they carry out, it defines the Means so as to reduce this separate nature, and consequently the Means themselves to nothing.

The interconnexions of the various Means with one another form the End, which the Means carry out. The End is the unity of the Means, and it is clearly to the End that these interconnexions, which unite the Means to one another, must be referred. Now the present category asserts that one Means would always do as well as another in carrying out the End, consequently, that the intrinsic nature of the Means has no relation to the End. It follows that the intrinsic nature of the Means has no relation to the connexion between the different Means. These connexions, however, form the whole of the external nature of the Objects which are considered as Means, and we saw, when we were dealing with Absolute Mechanism, that the inner nature only expresses itself through the outer. Therefore this intrinsic nature which the Means are asserted to possess can neither be their outer nor their inner nature—and what else is there left for it to be? Clearly nothing. To suggest that anything has a core of its own apart from and unaffected by its relations to other things would be to go back to the earlier categories of Essence, whose insufficiency has been demonstrated much earlier in the dialectic.

The one quality, indeed, which the Means might seem to

possess, apart from the End, was the plurality by which they were enabled to break up the unity of the End. But, if they are taken apart from the End, even their plurality vanishes. For the End is their only unity, and plurality without *some* unity is impossible. You can only take things together if they have a unity, and if you do not take them together, they are not a plurality. If we consider each of the Means without the End it is absolutely isolated, and in absolute isolation it can have no plurality. It is a mere blank unity —*i.e.*, nothing.

To suppose, then, that the Means have no intrinsic adaptation to the End, is to destroy the possibility of their having an intrinsic nature at all. If, therefore, they are still to retain any externality whatever to the End, that externality must be harmonious to the End. The private nature of each Means must simply consist of its fitness to carry out the End—for we have seen that there is nothing else for it to be. With this change, it ceases to be indifferent which Means are employed in carrying out a particular part of the End. Only those Means can do so which are fitted for the task by their own nature. We thus approach more closely in one respect to the ordinary significance of the word Means, which includes some special capability in the Object to carry out the End. It is for this reason that Hegel calls the next division of Teleology—

MEANS.

Of course, here as elsewhere, we must remember the special meaning which End has for Hegel. Though the Means have a certain externality to, and distinction from, the End, yet it is not supposed that they could exist apart from it. The position throughout Teleology is that the Means could not exist if they did not embody the End, nor the End if it were not embodied by the Means. Accordingly, to speak here of the Means as *fitted* to embody the End may be misleading. It is not a mere potentiality, as when, in the non-Hegelian meaning of the terms, we say that a knife is the means of committing murder. They would not be Means unless they *did* embody the End, and when we speak of them as being fitted for it, we only mean that their intrinsic nature co-operates in the process, and is not to be considered, as it was in the last subdivision, as indifferent to the End.

How, we must now inquire, does this category manifest its inadequacy? Hegel gives two demonstrations of this, the first of which is to be found in the *Greater Logic*

only, while the second is to be found in the *Smaller Logic* also. They may be said to be based on the same general principle, but are perfectly distinct points and must be treated separately.

In the first (*Werke*, vol. v., p. 229) he says that if we accepted the position of this category we should be forced to insert, between the End and the Means, a second Means, and then, between the End and this second Means, a third Means, and so on *ad infinitum*, and that this involves a contradiction. Let us expand this argument rather more than Hegel does himself, and examine its validity.

If the End and the Means are to be taken as distinguishable entities, then it is clear that each of them must correspond to all the conditions which are necessary to the existence of any entity. Now we have seen, over and over again, in the course of the dialectic, that no entity of any sort can be a blank or undifferentiated unity. Therefore, the End cannot be such a unity. It must be differentiated. This, indeed, has already been admitted, and the work of the Means is to differentiate it. But—and here the root of the contradiction appears—if the End has an existence distinguishable from the Means, it must have a differentiation distinguishable from the Means. Now the End is fundamentally a unity, and we have seen in the breakdown of Chemism that a unity cannot produce its own differentiation, but must have an element of differentiation which is correlative to, and not derived from, the unity.

Within the End, therefore, and apart from the Means, there must be an element of differentiation. But the definition of a Means, as we have seen, is just the plurality which differentiates a unity in this way, and this element of differentiation will be a second Means, between the End and the first Means. And now that it is a Means, it will, by the category which we are considering, be distinguishable from the End. By the same reasoning as before, the End will require some differentiation independent of the Means, and this differentiation will become a third Means, between the End and the second Means. And this process will go on *ad infinitum*.

Such an infinite process as this is clearly a sign of error. By the hypothesis the End and the original Means are united. But for this union an infinite series of intermediate Means are required. The End and the original Means can only be united when this infinite series is completed—that is to say, they never can be united. And so the category is contradictory.

Hegel's second argument (*Enc.*, section 211, *Werke*, vol. v., p. 230) is that the Realised End will, if we adhere to our present category, be nothing but a Means, that it will consequently require another Realised End beyond it, which in turn will be nothing but a Means, and so on *ad infinitum*. This also will require some expansion.

When we use the word End in its common and un-Hegelian sense, there is a clear distinction between the Means and the Realised End. A saw and a plank may be taken as Means to the End of making sawdust, but no one could mistake either a saw or a plank for the actual sawdust which is the Realised End. But in the Hegelian sense of End the case is different. For here the Means is not an Object which might be made to subserve the End. It is an Object which does subserve it, and subserve it necessarily and by its intrinsic nature. The Means therefore is an Object whose nature is such that it manifests the End. (If we are speaking of a single Object it is better, except for brevity, to say "which participates in manifesting the End," since of course an End can only be manifested in a plurality of Means.)

Now what is the Realised End? Is it anything more than this? It can be nothing more. The only form a Realised End can take is that of an Object whose nature is such that it manifests the End. And therefore, for Hegelian Teleology, there is no difference between the Means and the Realised End.

This conclusion we shall find later on to be the truth. But it is inconsistent with our present position, and the attempt to combine the two produces a contradiction. For the Realised End is the union of the End and Means, and, if these are taken as in any way distinguishable, it cannot be the same as either of them. Hence when we find that our Realised End is identical with the Means, we cannot regard it as really the Realised End. If it is one extreme of the relation it cannot be the union of both. We take it then simply as the Means, and look for another Realised End beyond it. (We may remark, for completeness' sake, that it would have been equally possible to take it as the Realised End, and then to look for another Means to mediate between it and the End. The course of the argument would be similar.) But the new Realised End would also necessarily be identical with the Means, for the same reasons as before, and our search would have to be continued *ad infinitum*. Such an infinite process would involve a contradiction, for it is the whole nature of the End and Means

to be united, and they can never be united, since it would require the completion of the infinite process.

The category which involves such contradictions must, of course, be transcended. And we have already seen how this may be done. The whole of the difficulty arose from the fact that End and Means were taken as separate realities. It was this that forced us to insert, between Means and End, an infinite series of new Means. And it was this which gave us the choice of either inserting another infinite series of Means between Means and Realised End, or else of prolonging the series of Means forward in the vain attempt to reach a Realised End which was different from a Means. We can get rid of the contradictions only by dropping our supposition that End and Means are in any way separate realities. We have known all along that they would only exist if they were connected. But now we are driven to the conclusion that they cannot exist if there is anything in either of them *except* its connexion with the other. The whole nature of the End is just to unify those Means, the whole nature of the Means is just to manifest that End. With this we pass to the final division of Teleology, to which Hegel gives the name of—

REALISED END.

The appropriateness of this name lies in the fact that the Realised End is the unity of the End and Means, and that we have now come to the conclusion that End and Means are not two realities connected with one another, but two aspects distinguishable within a single reality. The unity of the two sides is not built up, as previously, from their difference, but the difference is an analysis of the unity. And thus this category takes its name from the unity of the two sides—that is to say, from the Realised End.

We have thus arrived at the close of the Objective Notion. We have overcome the unbalanced abstractions of Mechanism and Chemism, and, instead of a mere plurality or mere unity, have found the basis of all reality in a reality of which plurality and unity are correlative and complementary aspects—each without any claim to an existence apart from its union with the other.

The Objective Notion ends with the conception of a self-differentiating unity, as the Subjective Notion had ended before it. But the conception is now a far deeper one. The self-differentiating unity of the Disjunctive Laws of Nature only reached the proposition that every A must be either B, C or D. But it was still possible that they were all B, and

that AC and AD were unrepresented species. If all carnivora must be lions, tigers, or wolves, that would not prove that any of them were tigers or wolves. If the world had been so differently constituted that there were no tigers or wolves, that would have made no difference to the lions. (That is to say, it would have made no difference to them from the point of view of the Subjective Notion. The lions would not be affected by the disappearance of another subdivision of the class to which they belonged. In so far as they were objects in the same world, any change in the tigers would affect the lions, but that does not belong to the Subjective Notion.)

It is quite different with the self-differentiating unity of End. There A is B, C, and D—not B, C, or D—for it is only in all the Means taken together that the End is manifested. Thus End and Means form a unity whose parts completely determine one another. The End determines the Means, since only one particular set of Means could express a given End. And, no less, the Means determine the End, since, when the Means are given, there is only one possible End which can be manifested by them. And, lastly, the various Means reciprocally determine one another. For none of the Means could be altered without altering the End, and this would alter all the other Means.

With this the Objective Notion closes. The next step will take us into the last subdivision of the Logic—the Idea.

IV.—TESTIMONY AND AUTHORITY.

By A. F. RAVENSHEAR.

I.—THE CLAIMS OF TESTIMONY.

In the best scientific work, even as in the worst, much must be taken upon trust; on the authority of the competent observer, skilled instrument maker, or original investigator. The Chemist, in establishing the existence of a new compound, or defining its properties, relies to a great extent upon the determinations of others as to the atomic weights, formulæ, densities, specific heats, boiling-points, refractive indices and other coefficients of the auxiliary substances or reagents he employs. In much of his apparatus—weights, balances, polarimeters—he relies upon the work of the instrument maker. The Physicist in like manner employs all such results as are in general repute—tabulated densities, temperature-coefficients, elasticities, weights, resistances. The Astronomer makes use of the observations of his predecessors, as well as of his contemporaries in distant observatories. The acceptance of observations and descriptions in this manner is still more marked in geology, zoology, botany. The disposition of rocks in various countries and the occurrence of minerals; the kinds and distribution of plants and animals; all are to any given systematiser largely matters of report.

It might indeed seem that, in physical science, time and opportunity alone are needed to enable a man of sufficient energy and capacity to do the work of a hundred observers. But in psychology it is far otherwise; for, whatever his capacity, one man knows only one mind. Reliance upon others in physical science may be merely unavoidable; but to Psychology it is essential.

Inductive Logic, in so far as it claims to be a theory of Scientific Method, ought then to include a theory of Testimony and Authority. But in the current treatment this seems to a great degree to be lost sight of. We are presented with a theory of scientific method conceived as followed out by an investigator working alone, and almost from the

beginning. It is not, indeed, explicitly laid down that every man must be his own Observer, Speculator, Experimenter, Calculator, and Critic. The complex interchange of opinion, observations, experimental results, criticisms—the division of labour—that constitutes the life of science, is simply dropped out of sight.

Testimony finds its chief use in the establishment of individual facts. A line of reasoning may be reinvestigated; an experiment may be repeated. But for knowledge of specific facts or events in the past, or occurring outside one's personal range, each is perforce largely dependent on testimony. Such knowledge must in great part be derived from persons present at the particular time and place of the occurrence. In the current descriptions of the method by which individual facts may be logically proved, the use of testimony is, however, scarcely referred to. In Mill's *Logic*, for instance, the method is thus described:¹ "When the phenomenon is within the range of present observation, by observation we assure ourselves of its existence; when it is beyond that range and is therefore said to be absent, we infer its existence from marks or evidences. . . . The simple existence . . . is inferred from some inductive law . . . we prove the existence of a thing by proving that it is connected by succession or coexistence with some known thing." It would be a somewhat forced interpretation of this passage to suggest that it covers the case of testimony as to a matter of fact. It might, perhaps, be said that the testimony itself is some known thing connected by succession or coexistence with the fact it reports; and that the inductive laws to which reference is made are laws relating to the conditions of trustworthiness of testimony. But to argue thus would seemingly be to adopt as a guiding principle the oft-quoted aphorism that 'language is given us to conceal our thoughts'; for even if enclosed in the passage cited, the idea can scarcely be said to be disclosed.

In an indirect manner Testimony is doubtless alluded to in Mill's discussion of the "grounds of disbelief";² and in the dictum "whatever contradicts a well-grounded induction is to be disbelieved". But this alone is not sufficient. We ought to determine not only what testimony must be rejected, but under what conditions it may be accepted. Between these two is a broad neutral zone within which we can do nothing but suspend judgment.

It seems likely too that some logicians have regarded

¹ Chap. xxiv., § 1.

² *System of Logic*, chap. xxv.

testimony as sufficiently dealt with in the discussion of Observation. In Venn's *Empirical Logic*,¹ for example, a passing allusion is made to testimony under the head of Observation. This is to look upon the acceptance of testimony as observation or experiment by deputy; but it clearly results in an incomplete treatment, in so far as it supposes us already furnished with some means of distinguishing the deputies that are trustworthy from those that are not.

Still, since the acceptance or rejection of testimony is a process of selection of the material of knowledge, it would seem that even though credence in testimony does not fall wholly under Observation, yet it ranges alongside it. But while Observation and Experiment are directed towards phenomena, the selection now in question is from among statements or assertions.

There is no ground for denying 'credence'—if we may use this term to denote critical acceptance of testimony or authority—a position co-ordinate with Observation in the supposition that it must necessarily be less certain than first-hand observation, or as it might be put less 'logical'. That testimony may, in certain cases, give even greater certainty than personal observation must be familiar to every one who recognises the great inequalities existing between different individuals in their respective powers. A person may well derive, perhaps in some unfamiliar department of knowledge, a degree of certainty from the affirmation of the qualified expert far surpassing anything he could reasonably derive from his own imperfect or untrained observation.

But Testimony is involved in Inductive Logic in a far more intimate manner than this. It might almost be said that Testimony is necessary not only to the establishment of the *universality* of the principle of the Uniformity of Nature, but even to the perception of *any* uniformity in the bulk of Nature's activities. Along with clearly exhibited uniformity in certain respects, Nature presents infinite variety. Some uniformities only are patent, most are disguised. We see that heavy bodies fall when free, but a balloon rises. The same piece of wood, however often we try it, will always float; but that a friend on one occasion, say, took wine is no guarantee that he will accept the same thing on another occasion. In such instances it is easy to specify the uniformities underlying the apparent irregularities; and in doing so we clearly see that in these as in other cases the

¹ *Empirical Logic*, p. 111.

perception of uniformity is the result of a selection and emphasis of certain features, commonly not noticed in our early acquaintance with the matter, which are brought to light by a comparison of those experiences with others. This emphasising of certain features and neglect of others—the process of analysis or abstraction—is not only a laying of stress on something in an isolated experience, but is also a selection and emphasising of other experiences. The balloon—an apparent irregularity to the rule that heavy bodies fall when free—is seen to exhibit uniformity when experience of hydrogen is brought into view; and the different behaviour of our friend under similar external circumstances shows uniformity when experience of varying bodily condition is brought into line with it. But these other experiences that must be employed to force the given experience to yield up its uniformity may not be within the reach of any one individual. The uniformities shown in the return of certain of the comets are visible only to those who know how to rely upon records many hundred years old. The uniformities brought to light by statistics are nothing to him who cannot depend on an army of co-workers. If the individual indeed were to confine himself strictly to his own experience, Nature, far from seeming universally uniform, would seem infinitely capricious. The universal uniformity of Nature can be seen only by an analytical use of the experience of others as well as our own. Mere addition of obvious uniformities derived from other persons' experience might perhaps give a restricted field of uniform action; but only by an intussusception of each other's experience does the universal extent of that field become known.

But in laying stress on some features we ignore others. What of those we neglect? the errors of observation, the individual variations when we are dealing with averages or elimination of chance, the 'irrelevant' circumstances which make up the difference between the abstract conception and the concrete experience. Is nature uniform only as far as the limits of errors of observation? This question scarcely needs an answer; but it furnishes an illustration of the preceding remarks on the use of the experience of others in the proof of Nature's uniformity. These neglected things are never intended to be neglected for ever. The ideally complete theory would take account of them all. Wherever at present this cannot be done the reason is that the appropriate experiences by which their apparent irregularity and caprice could be converted into law either have

not occurred or have not been noticed in the requisite relation.

The facts capable of introducing order and uniformity into the irregularities and caprices of our own individual experience are then so often not facts of that experience, or are, if there, so often overlooked, that the emphasis and selection constituting the perception of uniformity must to a large extent be performed by deputy; a substitute for direct experience in the interpretation of other experience must be found in the use of Testimony.

To this claim a seemingly strong objection, which has oftentimes been pitted against the empirical basis of Induction, might be urged thus: How can criteria of testimony be included among the principles of induction when they have themselves to be established by induction? Only under misconception, perhaps generated by false analogy to the alternate deduction of premiss and conclusion each from the other, could this be thought to be illegitimate. The apparent difficulty disappears as soon as we distinguish the successive stages in the growth of the power of reasoning inductively. First we find the inductive processes implicitly occurring in mental operations long before they become explicit. On a higher plane there are the explicit and fully developed processes. Lastly, the organised logical theory in which the principles are enunciated, their inter-dependence exhibited, their legitimate extent and necessary limitations defined; by which they are reduced to mutual consistency and precise accordance with experience. The perfecting of the principles is the proper business of Logic, not the origination of the processes. Exact principles of induction result from the working of the primitive processes, as, in the grinding of lenses, a truly spherical form results from the mutual attrition of surfaces initially imperfect. If the relation between inductive processes and logical principles were like that between conclusion and premiss the objection would be fatal. But it is not so: rather does Logic take the imperfect processes, grind them, so to speak, one against the other, and hand them back as nearly as may be in the form of perfected principles.

II.—CRITERIA OF TRUSTWORTHINESS.

Excessive credulity and excessive incredulity have each been fixed upon as the marks of ignorance and simplicity. Within the narrow circle of personal experience the uninformed person exhibits obstinate prejudice; outside that circle childlike dependence upon others. A theory of testi-

mony aims at showing how to steer an even course between these two extremes. In a well-informed mind the modes of belief here seen in sharp contrast both enter in modified forms. Each is to be seen in almost every estimate of the truth or falsity of the statement of another.

Every one believes himself to have some sort of justification, however obscurely apprehended, in accepting or rejecting a statement resting on testimony or authority. The precise nature of this justification, when valid, is the object of our present inquiry. In so far as an investigation is first-hand, the conditions to which the evidence must conform in order to constitute proof are those formulated in Logic. In so far as we depend upon acquaintance with the subject, grounds of disbelief are also discussed in Logic. But the questions now proposed relate to inquiries that for any reason are not first-hand; to those inquiries in which either from necessity or convenience reliance is placed upon the work of others. To what conditions then must testimony or authority conform in order to be reliable? What safeguards can be devised in order to lessen risk of error in judgments as to matters not within our own cognisance? These are the questions that must be answered by a logic of testimony and authority; and an attempt to give a sketch of the answer is made in the following pages:—

The Legal and the Mathematical treatment of the Subject.—The nearest approach to a consistent body of principles regulative of the admission and indicative of the trustworthiness of testimony might be expected to be found in the Law of Evidence. The work on that subject by the late Mr. Justice Stephen¹ shows, however, that it is scarcely to be found in the existing law in this country. Many of the rules as they stand at present are designed merely to facilitate the business of the courts—to regulate procedure and forms. Some are to limit the extent of inquiry, and some to safeguard the interests of strangers. Very few, strange to remark, aim directly and solely at securing reliability in the witnesses, or at setting up tests of trustworthiness—these are matters left to cross-examiners and juries. The rules, indeed, have mainly been framed to deal with the exigencies of judicial inquiry; and accordingly are more often narrower in scope and more often based on considerations of convenience than a purely scientific treatment of the subject from the point of view of Logic would permit.

¹ *Digest of the Law of Evidence.*

There are, nevertheless, some few examples of rules that might be looked upon as having been devised to attain reliability. Thus there are rules as to the necessity in a few isolated cases for corroboration—as in promise of marriage, charges made by accomplices, or in allegations of treason. There are the rules as to the ‘competence’ of interested witnesses, or those labouring under any infirmity. There is also the rule as to ‘directness’ of evidence—excluding hearsay except in certain very special circumstances. Lastly, there are the rules as to the sanction under which a witness shall speak.

These as will hereafter be seen are far from constituting an adequate list of safeguards. But it will be found that all except the last—which has reference to penalties and, therefore, does not here concern us—readily fall into line with and find a place among the criteria of trustworthiness indicated in the paragraphs that follow.

But if the Legal treatment of Testimony is inadequate, the Mathematical treatment seems positively useless. Problems relating to the conflict and concurrence of testimony have commonly been regarded as belonging to the mathematical theory of Probability. The probability of the truth or falsity of the assertions of the several witnesses being supposed known, that of any matter which some of them affirm and others deny is by its aid deducible. The mathematical solution of such a problem is doubtless logically based upon the data—but only when coupled with numerous restrictions expressed or implied. But these are such as to make the theoretical witness so highly abstract a personage as to find no counterpart in nature, unless it be—as Dr. Venn humorously puts it—a bag containing black and white balls.

To apply the method to real witnesses, resuming Dr. Venn’s argument in the *Logic of Chance*,¹ would require statistics of mendacity based upon a full classification of witnesses; and some means for identifying the class to which each witness should be assigned. It would also be necessary to assume—ignoring fact—that each person has a definite degree of reliability independently of the subject of testimony; or else to base the statistics upon a classification of matter as well as of witnesses. There would still remain even then the difficulty of determining on each occasion whether the witnesses were or were not independent or ever could be so absolutely; and lastly, the surpassing difficulty of deciding in how many ways each witness might go wrong.

¹ Chap. xvi.

The mathematical theory makes the evaluation of concurrent testimony depend upon the previous evaluation of individual assertions. It will, however, be submitted in the following pages that, to make the most effective use of corroboration, the reverse procedure should be adopted. We ought to start from the fact of corroboration, when we have it, and employ it as a means for distinguishing how far the conditions of trustworthiness have been satisfied by the individual witnesses. The inference is to be drawn from the nature of the corroboration. This method of dealing with concurrence of testimony, and with conflict, will, it is hoped, be found to be entirely free from the objections that may so forcibly be urged against the mathematical treatment.

Conditions of Trustworthiness.—It should be here noted that although for the sake of brevity the terms "witness" and "testimony" are employed, they are intended to apply to the conveyance of information of all kinds and in any form. The works of authors past and present, the deliverances of authority, writings and assertions of specialists and other investigators, the reports and descriptions of travellers, and recorded information from all quarters is to be kept in view. It does not seem easy to suggest a pair of terms that will fairly indicate all this; and the required extension of meaning must therefore be pressed into the somewhat specialised pair of terms here proposed. It may further be noted that testimony and capacity of particularly high value are commonly said to possess "authority"; and in what follows this latter term and its derivatives will be employed in accordance with this usage.

The first step, before tracing the bearings of corroboration, must evidently be to pass in review the conditions of trustworthiness of 'witnesses' considered singly. These conditions are not far to seek; the only point requiring remark being that the mode of derivation adopted must be capable of guaranteeing the completeness of the list.

In our examination of 'credence,' or the critical acceptance of testimony, we must take account both of the giver and receiver. Error must assuredly arise unless each of the two parties, the assertor and the hearer or reader, perform correctly the part of the operation that falls to him. Not only must the assertor speak truly, but the hearer must rightly understand. A presupposition to a consideration of the conditions that must be satisfied to justify us in relying on the statements of others is, then, that *the assertor's meaning must be correctly ascertained*.

Any discussion concerning possible safeguards against misinterpretation of the statements of others would take us into a region of logic bordering on that of definition. Let it suffice here to say that interpretation must be self-consistent; must neglect nothing in the data; must give full effect to the context—immediate, systematic and historical—and must not be limited to mere grammatical or logical analysis, but must take due account of the style and intention of the writer or speaker.

Let us turn first to the part taken by the assertor. It is clear that to impart information implies first the getting of it. The reliability of testimony depends not only upon the conveyance of the information being correctly performed, but also upon its having been correctly obtained; not only upon the veracity of the witness, but also upon his cognizance of the matter in hand. Two conditions or groups of conditions therefore might naturally be expected to unfold themselves; one set arising out of the process of conveying information, and the other from the processes of obtaining it.

Beyond these we should expect to find another if there be any influence likely to adversely affect equally both the acquisition and the conveyance of information. It is universally recognised that however careful and conscientious a person may be, yet the effect of interest may be to lead him unwittingly into error throughout the acquisition, the retention and the conveyance of information. To be free from such unseen influence in completeness is the unattainable ideal; but practical freedom from bias with regard to some particular matter is not so far out of reach. This relative *freedom from bias* is then one of the conditions that an assertor must conform to in order to be trustworthy.

In the process of conveying information there are evidently involved intention and capacity. A person will speak truly provided he wants to and can. Nevertheless a witness may be perfectly sincere, and yet fail to recall accurately the matter asserted; or even if he can do this he may still not succeed in expressing exactly what he has in mind. This factor then gives rise to two conditions—one that the assertor must be sincere, and the other that he must be accurate in memory and expression.

The great difficulty is, of course, to find out whether there is bias or insincerity in any given case. To a certain extent, as we shall see, corroboration deals with it; but if we are without corroboration there is nothing but to consider the circumstances under which the statements are made in

relation to the character of the assertor. This does not amount to saying that every one will be carried away if there be any inducement to deceit, but merely recognises that as some undoubtedly will, the evidential value of all uncorroborated assertion is thereby depressed.

As regards accuracy of memory and expression, the time that elapses after an occurrence before it is recorded or reported is one of the chief circumstances. Care would seem to be another. But it should be noticed that *carefulness* belongs rather to sincerity than to accuracy. Care is doubtless necessary to the attainment of accuracy, but that after all is only the way in which sincerity combines with ability in the production of accuracy. These two conditions will not be discussed at this point. The brief remarks already made are only intended to indicate the meaning of the phrases *condition of sincerity* and *condition of accuracy of memory and expression*.

The conditions arising out of the processes of obtaining information are also two. The ascertainment of facts, events and other matters of observation or experiment demands both means or opportunity for ascertaining them, and competence in observation, or judgment. The conditions that must be satisfied are then that the assertor must have had *sufficient opportunity or means for becoming acquainted with the matter asserted*; and that he must be a person of *skill or capacity adequate to the acquisition of the knowledge professed*.

The question is here again : How are we to know whether some certain matter is or is not within the cognizance of one whose testimony we are examining ? This may sometimes be difficult to answer ; but need not always be so. If we are unable in any given case to answer it satisfactorily, the testimony is of little value ; but if we can, we are on the way towards its evaluation. In some cases the answer may be easy. We should naturally hesitate to accept as fact an account of an occurrence by some one we knew had not been present ; or in accepting as fact the statements of some one volunteering to inform us as to what was passing in another person's mind, or to give us information as to any other matter that we believed to be beyond human faculty. Such considerations are summarised in the phrase *opportunity or means for knowing*, which is the name by which this condition will be mentioned in the pages that follow.

Special keenness or genius are of course not demanded unless the matter testified to renders them essential. But in many matters it is absolutely necessary to rely on the

expert in the arts of observation and experiment. We must be satisfied in such cases not merely that there has been no confusion between true observation and inference, but of much more besides. In scientific experiment we depend not only on the observer's power of seeing, but on his skill in doing. We must be satisfied not only that nothing present was missed, but also that the contriving and operative skill of the observer were such as to ensure that everything that could possibly be present was present. Natural endowment of sense counts for much—keenness of eyesight, touch, hearing. But practice and experience are factors equally important, especially in those inquiries depending on manipulative skill or on the use of complex instruments or methods. Facts of this character must be understood in the following pages by the terms *skill* or *capacity*.

The conditions, as we have seen, then, on which the credibility of a single witness depends, supposing his meaning first to have been correctly apprehended, comprise (1) his freedom from bias, (2) his sincerity and care, (3) his accuracy of memory and expression, (4) his opportunities or means for knowing, (5) his capacity or skill relative to the matter in question. The relationship of the criteria to each other may be exhibited diagrammatically thus:—

- | | |
|--|---|
| A. Those relating to the conveyance of information. | 2. Sincerity and care of the witness (conscientiousness). |
| | 3. Accuracy of memory and expression. |
| | 1. Freedom from bias—or unconscious influences. |
| B. Those relating to the acquisition of information. | 4. Opportunities or means for knowing. |
| | 5. Capacity or skill relative to the matter in question. |

It may be admitted that testimony is of the highest authority if it is deliberately given by a sincere person having had opportunities for cognizance of the matter and adequate powers of observation or judgment, who is careful and capable of accurate memory and expression, and is free from the influence of bias. But in place of the apparently simple question, "Is or is not this testimony reliable?" there now seems to be a multitude of questions,

seemingly no easier to answer than the original one. That there may, nevertheless, be some advantage in thus splitting up the main question in the hope of some one or more of the subordinates ones being answerable is obvious. For unfavourable answers to the questions as to sincerity or opportunity condemn the testimony without more ado. A further advantage, however, becomes immediately apparent when we begin to take into account the subject of Corroboration. We may often with the aid of corroboration of one kind or another draw conclusions as to the component questions far more certainly than we could as to the whole question ; and by an aggregate of testimony and other corroboration may in effect ensure that all the conditions have been satisfied that a single witness would conform to if perfect.

Corroboration.—The conditions of trustworthiness having thus been briefly enumerated, we are in a position to look more closely at the subject of Corroboration. This may take the form of concurrence—or conflict—of testimony, and confirmation by other evidence, which may either be internal or external. The various kinds of corroboration will be reviewed in the order named, beginning with concurrence of testimony.

As we have already seen, it is necessary in estimating the value of testimony to consider whether there is any want of sincerity or anything likely to breed unconscious bias in the mind of the assertor. To satisfy the conditions of logical proof on these points in the case of a single witness might be extremely difficult or quite impossible ; but if the circumstances and interests of the individual witness, where there are several, are sufficiently varied, the difficulty disappears. If indeed there is known conflict of interest between the witnesses with regard to the matter asserted, and they nevertheless agree, we may safely infer that insincerity has not been operative with the bulk of the assertors. Since we are given a conflict of interest but a concurrence in statement, most of the assertors we are assured must have spoken against interest ; whence bias or insincerity cannot have been operative in their several cases. *Bias and insincerity may therefore be eliminated by a concurrence of persons of sufficiently varied interests.*

In a less degree concurrence of testimony throws light on the extent to which others of the conditions of reliability are conformed to. We have seen that the value of testimony is largely dependent upon the sufficiency of skill or experience on the part of the assertor, on his powers of observation

and his opportunities for ascertaining the fact. The more varied the powers, experience and knowledge brought to bear on any question the more likely is the judgment to be well-founded. *Any assertion concurred in by persons of different training, habits, and point of view is likely to be accordant with a wider aggregate body of knowledge and experience than if made by one of them alone;* and is accordingly so much the more reliable than if it had no other support.

It is essential, however, in this case that the variety should be in knowledge or experience relevant to the assertion. This is an important part of the independence of the witnesses postulated in the mathematical treatment of testimony, and is perhaps more difficult of attainment than is a sufficient conflict of interest to eliminate bias and insincerity. Unfavourable cases are those in which it is not possible to obtain the requisite variety. An example may be easily imagined. Suppose we had the evidence of a number of men as to the colour of some object; and afterwards found out that they all worked in some industry productive of colour-blindness. The effect on their testimony would be much the same as though they had agreed to deceive, and we should naturally refuse to rely on their assertions even though we saw no appearance of collusion.

The remaining condition of trustworthiness whose relation to corroboration we have yet to mention is that of accuracy of memory and expression, and this does not seem to be touched by concurrence of testimony. On this, however, as well as on another of the conditions, light may be thrown by 'internal evidence' which has been adverted to as constituting another form of corroboration.

Rigid and thoroughgoing consistency in all parts—cogency of reasoning and absence of confusion—raise a presumption of accuracy and care. Even an occasional lapse as regards these characters is of no great consequence as invalidating the remainder; for wherever consistency and cogency do appear they are assuredly not the result of chance.

In the same way also that inaccuracy may be disclosed by inconsistencies of statement, a presumption of imperfect observation may be raised by a record that fails to distinguish exactly between results due to observation and those due to inference. Where these are not carefully discriminated in description and discussion there can be no certainty that they have not been confused in fact; and accordingly the work in which they appear cannot be regarded as fulfilling the condition that has reference to observation.

The third and last form of corroboration is that gained by

testing or verifying the statements by extraneous evidence—experiment or other means. Whenever this is resorted to we are approaching a new field. Just to the extent to which appeal is made to extraneous evidence we engage not so much in a deduction of reliability as in an inductive inquiry. It is true that a test may be applied merely here and there, perhaps as to accuracy, perhaps as to meaning, but such tests if sufficiently multiplied would in reality constitute an example of the full process of Induction. The hypothesis being that the evidence is true, it is established or overthrown by its agreement or otherwise with the tests applied.

Cross-examination as practised in the Law Courts—the most powerful weapon conceivable for exposing falsification—may indeed be regarded as a special case of this. It is impossible that any person should be aware, in framing an untrue story, of every discoverable fact that might have a bearing on it. Hence however fully he may harmonise his tale with all he knows, it is extremely unlikely that an exhaustive cross-examination would not bring to light some conflict with matters not known to the witness, although known to others. The ‘verification’ of the story in such cases fails.

Conflict of Testimony or Authority.—Up to this point complete concurrence of testimony only has been dealt with. But it is commonly recognised that ‘substantial agreement coupled with circumstantial variety’ is of more value than precise accord between a number of witnesses; since the latter imports a suspicion of collusion. Even when the variety in detail is considerable we may find that as to those parts in which there is no conflict the testimony is reliable. This is not, however, an example of true conflict, since we here conclude only as to portions in which there is accord. Cases of true conflict are those in which one of two inconsistent assertions is preferred on account of the superior trustworthiness of its source. To illustrate apparent conflict of the former kind, we may suppose that we have a number of opposing statements easily separable into allegation as to matters of fact and inferences therefrom. If then we find that the divergence is wholly or mainly as to the inferential portions, we have, other circumstances being favourable, good ground for concluding that the matters of fact are correctly stated.

In order to deal with true conflict of testimony as distinguished from apparent conflict—that is those cases in which the divergence is in detail or in matters irrelevant to what we wish to ascertain—we have to determine on

what conditions the superiority of one source of testimony to another depends.

Sincerity and absence of bias *may* belong to any testimony, but to "authority" or authoritative testimony they must. The possession of these characters does not alone guarantee its trustworthiness ; but their absence—or a doubt as to their presence—does assure us of its *untrustworthiness*. The remaining characters—(1) accuracy of memory and expression, (2) opportunities for knowing, and (3) capacity—are therefore those on which the relative value or the grade of trustworthiness of testimony depends. For these may vary in degree without absolutely invalidating the testimony.

Where, then, there is direct conflict, which of the two opposing statements is to be preferred must be decided by determining which of the assertors or groups of assertors has been the more accurate in memory and expression, or has had the better opportunities or capacity for ascertaining the matter asserted. This account of the procedure to be adopted in cases of conflicting authority still, however, needs further amplification ; for there are three characters to consider, and the weight of these perchance in any given case may not be all on one side.

It may happen for instance that great capacity is found coupled with small opportunity ; or ample opportunities with relatively smaller capacity. Granted the bare minimum of each of these characters—without which the testimony would fall into the great class of the unreliable—can we fix the order of precedence, in respect of their authority, of the several combinations that may occur ? An attempt to do so soon discloses that their order must vary with the nature of the subject-matter.

Testimony may broadly be divided into (1) expressions of judgment or opinion, and (2) assertions of fact ; and the latter into (a) matters of common observation or patent facts, and (b) latent facts, the subject of experiment or research. It is clear that capacity plays a chief part in the trustworthiness of judgment and research, while in the case of patent facts the reliability is chiefly grounded on the assertor's means or opportunities for knowing. Further, nothing beyond the bare minimum of accuracy in memory and exposition adds anything to the reliability in either case. In expressions of judgment or opinion, and in the description of facts disclosed by research, it would seem, therefore, that we ought to give preference to the authority of capacity, while in regard to patent facts we must conclude that authority is to be measured chiefly by opportunity.

There is a close relation between the subject of conflict of authority and the further question : What attitude must we assume towards authorities or groups of assertors that seem to contradict our own personal conclusions or experiences ? This embodies in another form the main question that, as it has before been stated, a theory of testimony sets out to answer, *viz.* : How shall an even course be steered between excessive reliance on self, and excessive dependence on others ? The preceding discussions seem to furnish us immediately with the answer. We must in thought each go down into the crowd—and deal with the case as one of conflict of testimony only—our own testimony against that of the others. The question is resolved into one of comparison of authority ; and the answer depends on relative opportunities and capacities for ascertaining the matter in hand, considered with reference to the nature of the subject in the manner above sketched out.

Authority ; the Expert or Specialist.—By the aid of the conclusions arrived at above we may attempt also to define the limits within which the argument from authority is legitimate.

Criteria of testimony, as we have seen, rise into primary importance in those cases in which reliance is placed on the statements of others either from *necessity* or for *convenience*. How much we shall concede to convenience in any given case is clearly not a question for Logic ; and the logical interest accordingly centres about the claims of necessity. We wish then to distinguish precisely between those cases in which we must of *necessity* rely upon others, and those in which we may examine the reasoning, criticise the evidence, and trace out for ourselves the dependence of the conclusion upon observation and experiment.

This we shall find is easily accomplished by the aid of the obvious distinction between simple facts of observation or experiment, and critical judgments formed on complex considerations. The facts of observation cannot from their nature be repeated and examined at will. We must wait an opportunity for observing the event ; and that opportunity may never be ours. In matters of experiment also we are dependent on laboratories, observatories, and on the skill and co-operation needed for making use of them. Therefore must we in matters of simple observation and in matters of experiments often of necessity rely upon testimony. This necessity is in general merely practical as regards the results of experiment, but is absolute as regards specific events in the past or outside our own range of observation.

In results arrived at by reasoning on the facts of observation and experiment we are, however, not under the necessity of relying wholly upon others. The reasoning admits of being dissected and critically examined. It is not, like an experiment or observation, an event limited to some particular place and time; but is capable of repetition merely at the expense of intellectual exertion. Yet, even after the analysis has been carried to its farthest limit, there will still remain the facts of observation or experiment on which it is based. And as to these we may still be under the compulsion of relying upon the assertions of others.

Our conclusion is then that *necessity* for reliance on others exists nowhere except as to certain matters of observation or experiment; and as to these only in so far as they themselves are unanalysable or simple facts. The critical conclusions of competent investigators may on certain occasions be adopted on practical grounds without a sifting of the evidence; but to repeat a former remark this can receive no justification from the point of view of abstract logic. An assertion being given us, if it can be analysed it should be. If it cannot we must either suspend judgment or see how far the assertor satisfies the conditions of trustworthiness. If we are unable to do this, we finally have no choice but to avoid coming to a conclusion until we can.

Among the various kinds of authorities the *Specialist* and *Expert* deserve more particular mention. The terms are perhaps not very sharply distinguished; but 'specialist' adverts rather to the attainment of high proficiency by a limitation in the range of inquiry; while the term 'expert' imports the possession of a high degree of skill or capacity. They seem to differ also in this, that while the specialist must possess *all* the qualities of authority the expert need not. The latter may be an expert in some one or more of the particular kinds of skill or capacity that go to the making of authority. Thus we may have experts in observation, or in experiment, or in some particular variety of one of these. The two terms, however, are often used synonymously.

The natural home of the Expert seems to be the Law Courts, where—especially in Patent litigation—his habit is to distribute his favour impartially between plaintiffs and defendants. This habit of his gives point to the question: What is the proper way to use him? How can he best be made to give reliable assistance in any inquiry?

We have already seen that the argument from authority is logically defensible only when no other sufficient evidence

is available; only when either absolutely or practically it is a necessity. A slight development of this shows us the Expert in his proper place—he should be employed only in so far as his assistance is unavoidable. He should, to make the strictest use of his powers, be referred to only to prove or to point out unanalysable facts of observation or experiment not without his aid perceptible to or attainable by the inexpert. If this rule be departed from in any given case and the *expert* asked his opinion on a matter *as a whole* it should be clearly kept in view that such departure is justifiable only as a concession to convenience.

Concatenation of Testimony.—It is an obvious conclusion from the preceding discussion that a mere random assertion—uttered we know not by whom or under what circumstances—is in general of little value as testimony. Statements have weight as testimony only in so far as we already have information about the assertor independently of the subject under consideration. Testimony then, in general, consists in assertions whose trustworthiness can be judged through the medium of independent information about the assertor.

The case in which this independent information is obtained wholly or in part through the medium of other testimony deserves, on account of its wide occurrence and the importance of its uses, to be especially singled out. Our sources of testimony need not be known to us first-hand; indeed, perchance they are not usually so. By the various ways of obtaining a knowledge of distant facts, *including reliance on testimony*, we may obtain information about persons or writers at a distance or in the past sufficient to enable us to judge as to the trustworthiness of any statement that can be properly attributed to them.

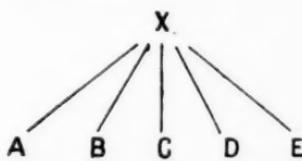
It is of some interest that testimony reached and vouched for in this manner can be shown to be free from the obvious objections to statements that have been handed on from person to person, each relying on his predecessor. The latter certainly bears a superficial resemblance to the use of testimony for establishing the credentials of other witnesses, and is liable to be confused with it. Indeed, in enforcing the importance of the distinction between the "self-infirmative chain" and the "self-corroborative chain," Bentham¹ and those who follow him seem to make no mention of any other possible way in which the testimony of a number of persons might be concatenated.

¹ *Rationale of Judicial Evidence*, vol. iii., p. 224, and chap. x., bk. vi.; Mill's *System of Logic*, chap. xxiii., § 6.

A "self-infirmative chain" is one in which a statement passes from mouth to mouth among persons whose credibility in mathematical language is less than unity. The probability of the truth of the final assertion is then measured by the product of a number of fractions corresponding to the number of links in the chain. It, therefore, continually diminishes as the length of the chain increases. The process may be symbolised thus—where the assertion X passes from E to A through D, C, B :—

$$X-E-D-C-B-A.$$

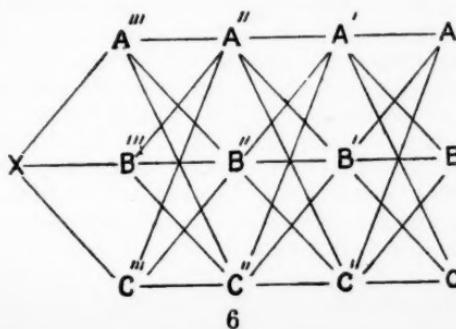
In the "self-corroborative chain" a number of persons independently make the same assertion X; a process which may thus be symbolised :—



The credibility of the assertion in this case is greater than that of an assertion of any of the witnesses taken separately; but the process possesses the disadvantage of carrying us but one remove from the fact; it takes but one step.

But if we make use of testimony as to the credentials of our witnesses, which is the method that our examination of the conditions of trustworthiness has led us to—if we inquire how far our witnesses satisfy the conditions of reliability—we find that we can retain the advantages of the "self-infirmative chain" without sacrificing those of the "self-corroborative chain"; we can combine the length of the former with the strength of the latter.

The process may be represented in a diagram thus :—



Here we have statements of A, B, C, to show that A', B', C', respectively satisfy the conditions of trustworthiness with regard to their assertions about A'', B'', C''; and those of A'', B'', C'', as to the reliability of A''', B''', C'''. If, now, the last three agree in an assertion X we have confirmation of the same kind as in the "self-corroborative chain," joined with a number of steps or removes such as we find in the "self-infirmative chain". We have constructed in fact what might be more aptly termed a "bridge" than a "chain". This process is not a mere conjunction of the two former; for the assertion X, it should be noticed, does not pass through all the groups of assertors. We are supposed to get that directly from A'', B'', C''. It is the reliability—the opportunities, capacity, sincerity—of the various assertors that is vouched for in successive stages. These are of course quite arbitrarily represented in the diagram. The number of persons in the different stages might vary largely; the contributions of the different witnesses, indicated by the number of cross-lines drawn from the letters in the diagram, might be very unequal; nor need the stages themselves be so distinctly marked as in the figure.

It is, however, quite unnecessary for the present purpose to attempt to represent on a diagram the ramifications of testimony in the full complexity of their actual occurrence. We may yet keep their variety in mind, and may also add in thought the further complication produced by the introduction at every stage of corroboration by extraneous evidence.

After the utmost has been done in the direction of getting knowledge first-hand, whether scientific or practical, the evidence in great part finally assumes this form. We cannot entirely sever any portion of knowledge from its context. When the historian makes use of the admissions of Clarendon in favour of the Parliamentarians, he first adduces contemporary testimony and other evidence to show the part played by his author in the public affairs of the time. This comes to the historian largely through manuscripts or books; perhaps fortified by the independently established history of some library of repute, or place of public record; perhaps guaranteed by generations of trustworthy editors and commentators spanning the interval from that time to this; possibly even the part taken by famous publishers may enter into the total sum. In the acceptance of Livingstone's accounts of the countries through which he passed, are not the relevant grounds in part the esteem in which he was held by his contemporaries, coupled with their

credentials ; in part the credentials of the Societies and other media of record and publication through which his work has in successive stages come to the individual reader ? If I submit myself to the knife of the Surgeon, how have I assured myself that he will do the right thing, unless by relying upon a complex tissue of testimony as to the professional ability of a large number of individuals ? The same thing is seen in the employment of mathematical results by non-mathematical persons ; and, as an attempt was made to show at the beginning of this paper, cannot by any process be avoided in even the best scientific work.

The actual occurrence of these "bridges" of testimony, explicitly set out in the structure of each one's knowledge, is doubtless rare. The singling of them out must in general be a process of logical analysis. But a man can so little divest himself of his social nature that they exist implicitly in almost every part of his knowledge. They are characteristic not merely of loosely and carelessly held floating opinion ; they chiefly rise into prominence in the more carefully and exactly ascertained portions of his knowledge ; those, indeed, more than in any others, in which he is apt to take pride for having thoroughly worked out and sifted them for himself.

V.—CRITICAL NOTICES.

Raumaesthetik und geometrisch-optische Täuschungen. Von THEODOR LIPPS, Professor a. d. Universität München. Mit 183 Figuren und einer Tafel. (Schriften der Gesellschaft f. psychologische Forschung, Heft 9-11, II. Sammlung). Leipzig: Verlag von Johann Ambrosius Barth, 1897. Pp. viii., 424.

THE leading idea of this treatise (a masterly one from any point of view) is that the aesthetic effect of geometrical forms and the optical illusions connected with them depend on one and the same cause, are different aspects of one and the same thing, which Prof. Lipps in his introduction describes as the relation of these forms to nature and to living reality. He offers then an identical solution of two questions. But much the largest part of the five sections into which the book is divided is occupied with the detailed explanation of geometrical illusions, while their æsthetic bearing is pointed in short supplements to the various chapters, which, without being fully worked out, are full of the most suggestive hints towards the æsthetics of these figures. The general principle on which, with extraordinary consecutiveness and unity of thought, every detail is strung is described in the first section 'on the æsthetics of beautiful spatial forms'. It is a principle of mechanical or rather dynamical interpretation. Dr. Lipps follows an instinct both of art and of mercy in preparing the way for the abstract statement by treating a concrete example, the Doric column. The tall height of the column suggests a life which aspires upwards against its own weight. The circular form suggests a compression which prevents the column from flattening or expanding horizontally. And these tendencies are not merely juxtaposed but the one depends on the other. The column gathers itself together in order to rise. Such inner activity is the source of pleasure because we sympathise with it. Our æsthetic pleasure in spatial forms, and, the author adds, all æsthetic pleasure (p. 7) is "a feeling of sympathy which makes us happy". The spatial form (and even in a marble statue it is the spatial form as such, and not the material which pleases) pleases because it is regarded as animated with a principle of freedom like that of natural organisms, only more self-contained. We read into the figure past experiences of similar movements, and particularly of movements performed by ourselves. In doing so we

follow the law which Dr. Lipps has expounded elsewhere (in his *Grundthatsachen*) that experiences consolidate into a generalised law of mental working which serves us in fresh experiences which are only similar to the past ones. An excellent illustration of this "free movement" is given in the contrast between the unæsthetic effect of mere regularity as in a series of semicircles placed end to end with their concavities alternating in direction, and the beautiful smooth movement of the ordinary sinus-curve.

But the æsthetic effect demands more than the free activity of mechanical forces. The forces must form a unity, and again we read this unity into the object from our own personality. Such unity may be either successive, as in the continuous impulse of movement in a column, or simultaneous as where a number of columns spring from the ground together (like an act of will comprehending many similar parts) or 'central' where several activities radiate from the same point, as in a circle, and produce equilibrium. This last equilibrium is however only a special case in which the forces are in equilibrium to begin with. There is in a different sense an equilibrium in all beautiful forms which is of the last importance, for on it all the subsequent chapters depend. This is the equilibrium which grows out of the action of the forces engaged and is thus in any moment being reproduced. If the column rises it is also depressed by its weight, if the circle is compressed by the circumference it expands against it. Every force has in fact its counterforce, and in each case one of the two is primary and the other secondary, the one is described as 'force' and the other as 'tendency'.

But if there is always this equilibrium of force and tendency, how can illusion arise? Dr. Lipps insists (section ii.) that illusion is not an error of perception (*Wahrnehmung*) but of judgment. A line is underestimated, where this is the case, not because we see it smaller but because we judge it smaller in comparison with a standard of equal length brought in *idea* to compare with it. Only the judgment is so immediate and unreflective that it forces itself upon us as if it were an integral part of the perception. The illusion is an affair of ideas only. And we get geometrical illusions because of the forces we imagine working in the figure, and therefore altering the figure in idea in this direction. Thus if I imagine a line more compressed by its ends I judge it smaller than an equal line which does not suggest so much compression. The reason then why we can get such illusions in spite of the equilibrium of force and tendency is that we think of the one coming into play before the other, or we think of them as acting at different points of the figure. Hence, an enclosed space, e.g., a square, looks smaller than an equal space where the vertical sides are undrawn because compression by the vertical lines is primary. But a letter enclosed in a circle seems bigger than it is because the compressing force acts at the circumference, while the expansive force belongs to the whole included surface and is shared by the figure within.

Three different forms of the antagonism of force and counter-force are recognised: (1) that of contraction, or compression, or limitation and expansion (*Begrenzung* and *Ausdehnung*); (2) that of gravity and vertical expansion; (3) that of identity and change of direction. The mass of the book falls into four sections, in which these three antagonisms are exhibited, though the division does not closely follow this enumeration. Under various heads an enormous number of illusions are described and arranged (some familiar, many new and of very ingenious devising), the mere collection and arrangement of which is itself a work of value, while their demonstration from a single principle is a wonderfully educative piece of systematic thinking, even if the reader is not yet convinced that the last word has been said. It is impossible to follow the argument closely. It will be best to outline the method of each section and give a few illustrations which can be described without diagrams.

Section iii. Expansion and Contraction (or Limitation). In horizontal or lateral directions, the figure is conceived as compressed (like a spring, I suppose) and then expanding against the pressure. The compressing force being primary, the figure, e.g., a line, is underestimated, the boundaries are pushed inwards. In general a compressed form is underestimated. So a shilling looks smaller than its mould in wax because the limiting circumference acts in different directions in the two cases. A striking illusion (p. 75) is produced by a vertical row of points which have other points placed beside them horizontally, in one group to the right and in the next to the left, and so on: the points in the vertical row are deflected out of the vertical towards their companion points. The underestimation may be reduced by diminishing the compressing effect of the limits in degree, e.g., including the points of a point-distance in circles, which makes them independent. According to this the straight line should look smaller than the corresponding distance, but this is counteracted by the greater solidity of the line, which gives it more expansiveness, or elasticity, while, at the same time, it expands only in one direction, whereas the mere point-distance is free to expand at right angles to its direction. There are secondary effects of limits on one another which I must pass over (c. xviii). With forms whose trend is vertical, the primary force is either gravity or the upward force according as the figure is viewed from above downwards, or from below upwards. In the first case the lower limit drops, in the second the higher limit rises. In both cases the vertical direction is overestimated (as against an equal horizontal length). This explains the familiar illusion by which of two oblique lengths in one straight line the upper seems to be continued above the lower.

Besides degrees of limitation, an interesting and important use is made of the notion of stages of limitation, which may be briefly explained. We may have a series of figures in which the com-

pressing force is greater and greater. But the narrower figure may be squeezed more (1) because it is weaker, or (2) merely because it is more compressed, though it has the same expansiveness. The results will differ according as we incline to one or the other view. Thus in the well-known illusions of 'confluxion,' or approximation (*Ausgleichung*) where a short line between two long ones looks longer, the same line between two short ones shorter, the lines in each figure all seem to partake of a common impulse (case 2), to have the same expansive force: hence the tendency to equalisation. On the other hand with surfaces like squares and circles the reverse is the case, for these figures seem independent, hence (case 1) the small circle between two bigger ones seems smaller, because of its inherent weakness. This is how Dr. Lipps explains the 'contrast' in this illusion.

Section iv. on Division and Composition is perhaps the best because the most intricate example of Dr. Lipps' method, and certainly the most difficult. It deals with the illusions of divided distances or divided lines (especially the case of symmetrical division into three), as well as of circles divided by a concentric circle, and these illusions stand in the closest connexion with those of approximation just described. They are various and interacting. Primarily the part is underestimated and the whole distance overestimated; but secondarily the reverse is the case. To explain the primary illusion: take a part, say the middle part, and compare it with an independent distance of the same length. This latter distance, by approximation to the whole divided line, seems bigger; the mere part therefore as a part, and not independent and therefore not thought of prominently as having equal expansive power with the whole distance, seems smaller in comparison with the same independent distance. On the other hand, the whole line may be considered as made up of independent portions which are overestimated, and is therefore itself overestimated. We may put the same thing from the compressive side, but I fear to encumber the statement. The opposite illusion arises from considering the part as sharing in the movement of the whole distance, as tending to expand to the limits of the whole. The bigger the part (still the middle part) is, the more it seems to break down its own limits; or, to put the case otherwise, the more it seems to be compressed by the limits of the whole distance and to be relieved of the compression of its own limits. This is beautifully illustrated by the effect of lightness given to a heavy pillar or cupboard when it supports a light weight (p. 158). The whole line is for similar reasons now underestimated. Owing to the interaction of these two causes the illusion varies with the size of the middle part, and the character of the variation is traced with great minuteness in a series of chapters (cc. xxix.-xxxvi.).

The famous Müller-Lyer illusions (the 'optical paradox') are

treated in this connexion. Where the oblique lines attached to the horizontal line are directed outwards, the horizontal is overestimated, because its ends compress the oblique lines outwards, and so compress the line itself less inwards ('coincidence of activities in opposite directions'), or what is the same thing, because it forms a relatively independent part of a continuous though broken line. When the oblique lines are directed inwards the compression exerted on the oblique lines as well makes the compressive force of the ends of the original line seem greater ('coincidence of activities in similar directions'), and the line is underestimated.

Section v. treats of illusions of direction, both familiar ones and also new variations of these. In the *Poggendorf* figure when an oblique line proceeding from a vertical seems more oblique, the illusion arises from supposing that the original movement in the vertical is deflected by a deflecting force. If we regard the oblique line as the original direction of the whole figure the vertical may in its turn appear deflected and hence 'contrast,' a distribution over both lines of the overestimated obliquity. The bending of straight lines through the proximity of curved ones, and the so-called overestimation of acute angles (*i.e.*, small divergencies of direction) follow here. Another class of illusion is typified by the *Zöllner* pattern where lines in one direction form a parallel series across the main line of the series as a whole. Many interesting variations of this are shown—among them, convincingly, the new *Münsterberg* or "Milton-Bradley" one (p. 319).

Section vi. on 'Varying Limitation of Surfaces' is the most elegant and convincing part of the whole demonstration—in particular where it deals with illusions of figures which alternately bulge and contract. A chapter on tapering (*Verjüngung*) describes the illusions of triangles and trapeziums. I find it difficult to describe the principles of these sections without the help of actual figures. But I may refer particularly to the æsthetical conclusions drawn, for instance to the contrast of Gothic and classical styles (pp. 347-8) and the treatment of the *Spitzenmotiv* in the Gothic spire (c. 52). Finally we have a chapter on the illusions of solid figures contracted in the middle like an hour glass, or bulging like a vase or the base of a column.

This account (faithful, I hope, though too short for those who have not read the book and superfluous for those who have) may give some idea of the way in which a single thought is made to cover a vast number of phenomena. Besides its admirable systematic completeness, the book has the signal merit, in such cases as those of contrast, of attempting an actual explanation of the phenomenon instead of using the name of the phenomenon to designate a mysterious cause. The question of whether the figures in every case verify the theory is a matter for experts in this line, and I am glad therefore to refer the reader to a discussion between Prof. Heymans and Prof. Lipps contained in a criticism by the

former in the *Zeitschrift für Psych.*, etc., Bd. xvii., pp. 383 ff., and a reply by the latter in Bd. xviii., pp. 404 ff., which reaches me while revising this notice for the press. Some of the figures in the book are not convincing, and particularly in the elaborate discussion of divided distances in cc. xxix.-xxxvi., which Dr. Lipps tells us he had not originally intended to print. But this may depend on the particular selection of figures which as he says may not be equally convincing to every person. Just because of this if for no other reason one would think actual measurements such as those made by Messrs. Heymans, Thiéry and others would be so useful. Dr. Lipps has deliberately in his experiments abstained from such measurements, but the reason as explained in his recent article (p. 425) that the force which the ideas of tendencies possess and their relative effects upon us cannot be measured does not seem very good, for it assumes the truth of the theory.

But without questioning the completeness of verification by experience, one may still, on more general grounds, remain unconvinced that the theory gives the primary reason of the illusions while believing at the same time that it contains an important result. I will explain my difficulty. The general theory that the illusions are illusions of judgment would not of itself cause any hesitation, for by allowing that these judgments are so immediate as to appear part of the perception the author separates them from explicit judgments. But the fuller account which Dr. Lipps gives in his recent article of how the illusion arises, causes me much difficulty. It appears now that the primary seat of the illusion is not the illusory figure itself, but the ideal standard with which it is compared. Thus, in the Müller-Lyer illusion, the line B with outward appendages seems bigger than the simple line A, because A when in idea juxtaposed to B seems smaller. In other words, we see B bigger because it really is seen bigger than our idea of A. I confess I had previously misunderstood the meaning of the process from the book. According to this then A shrinks in idea because its compression is not relieved as B's is. I find it hard to see how this applies to the case of deflection. But in any case I observe, (1) granted that the retinal image of B undergoes no alteration, there seems to be no greater essential difficulty in supposing the seen B to be modified in perception than to suppose the imagined A to be modified in a definite direction by the addition of a fresh idea, as it must be if the force interpretation holds; (2) the content of this elaborate process still has to be taken up 'immediately' into the perception of B. And (3) the account seems to agree ill with my subjective experience. If I first draw the line A and then add even on one side only the oblique appendages, I find the line, to use famous words, 'a-swellin' visibly under my eyes'. I find it hard to believe that it is only my idea of the original A which has shrunk. At the same time I have in my eyes the very marked experience of movement.

This brings me to my real difficulty. One would like to be convinced by so comprehensive a theory. The principles employed are undoubted—the law of the unconscious working of mind as Dr. Lipps understands the phrase—the question of the propriety of names not being raised; and again, the method of reading our own personality into objects. But what I miss is a point of application for these ideas of forces. If I treat an object as one, it is because the object gives me many and coherent presentations in a combination familiar to me from my experience of myself. Before we can apply the idea of force we must feel or imagine the figures to be the seat of movements, there must be something in our experience of the figure which either is or suggests an experience of movement. But where this exists, what need to seek a further cause (I mean a further consciously entertained cause) of the illusion? More movement in a certain direction means more extension in that direction. If the legs of the Müller-Lyer figure draw my eyes on really (as seems to me to be often the case) or in idea, the illusion may in these cases be at once explained. It is well known that optical illusions are referred by Prof. Wundt to actual or anticipated eye-movements, and he has recently restated his view (with additional matter which does not directly concern us here) in an important treatise—*Die Geometrisch-optische Täuschungen*, Leipzig, 1898 (repeated in substance in *Phil. Stud.*, xiv., Heft 1). In some of the cases he adduces my own feelings of movement in the eyes are so marked that I find an explanation by reference to the kinæsthetic experiences of the eyes to be the most natural in the world. Dr. Lipps will have nothing to do with eye-movements as an integral factor in space-perception. Now, one may confess that no extant theory of them is satisfactory, and that much which used to be explained by them may be plausibly explained without them. Still one may point to exploration and fail to understand the impertinent superfluity of the experience of eye-movement if it is only the mere physical movement which is of use. And again one may urge that these very optical illusions are an important chapter in the theory of space-perception, and demand discussion on their own merits. Consequently I, and perhaps others, feel that it is wiser to be off with the old love before we are on with the new.

Hence the difficulty which I should like to have removed before accepting Dr. Lipps' theory of mechanical interpretation as explaining all geometrical illusions, is that in the present statement his forces seem stuck on to given data, and not an outgrowth from them, and that when their connexion is realised through the implication of movement they are, at least in some cases, superfluous for the primary purpose. But this would only prevent us from identifying the cause of optical illusions and of the æsthetic effect of the figures. For this interpretation may be the analysis of the forces at work in the movements contained or implied in the perception of the figures, and as such would be of the

last importance for understanding their æsthetical character, and in particular cases may perhaps also be required (as, e.g., in the 'contrast' of the small circle between two big ones) to account fully even for the purely optical effect. At the same time, if this criticism is well-founded, since we may in any case go on explicitly to conceive of these forces as at work, it is not surprising that all optical illusions should accord (as we may assume they do) with the conclusions of the mechanical theory, though that is not needed to explain the psychological effect.

S. ALEXANDER.

Die Sociale Frage im Lichte der Philosophie. Von DR. LUDWIG STEIN, Professor der Philosophie an der Universität Bern. Stuttgart: Ferdinand Enke, 1897. Pp. 791.

THIS thoughtful volume is based on a series of lectures on Social Philosophy delivered by Prof. Stein in the first place at Zürich, and afterwards in a more comprehensive form at Berne. These lectures, it appears, were not addressed to an audience of specialists, but to the educated public of the university interested in social questions. The manner in which Dr. Stein's book originated is more or less perceptible on almost every page. It is vivacious, rhetorical, expansive; free from technicalities; and much more readable than the majority of German treatises on serious subjects. But it must also be observed that the volume has the inevitable defects of its qualities. The expository methods of the lecture-room have had an unfortunate effect on the bulk of the book. In these days of wide and varied interests it is expecting too much of human nature to toil through a volume of almost 800 pages, when the burden on the patient reader might have been lightened by a process of judicious compression. If Dr. Stein's book reaches a second edition (and it undoubtedly deserves to do so), it is to be hoped that he will consider the advisability of altering the arrangement of the materials, and dividing them into two volumes. The first volume would deal with the history of Social Philosophy, which now occupies about one half of the present book; and the second volume would be confined to an exposition of the author's own system.

Prof. Stein's sketch of the history of Social Philosophy from the earliest times to the present day is very well done. It does not profess to present the subject to the reader from an original point of view. Perhaps it is all the better on that account. The desire at all hazards to be new, which not infrequently characterises German learning, has its dangers as well as virtues. Measure, balance, proportion are sometimes sacrificed for the sake of novelty, with the result that instead of a catholic presentation of the facts we get a sectarian insistence on points of minor importance. In tracing the history of Social Philosophy, Dr. Stein

takes the opportunity of discussing the materialistic conception of history as it is set forth in the writings of Engels and Marx. He admits that among savage and uncivilised peoples the life of the community was determined by the constant and overwhelming pressure of material conditions, in the form of economic needs. But he points out that although the earliest forms of social life are the historic product of economic evolution, yet the ultimate origin of economic evolution itself is psychical, and not material. As social organisation advances Dr. Stein holds that the materialistic conception of social development becomes less and less accurate as a key to the interpretation of the facts. Mental conditions increase in power and importance; they tend to balance and finally outweigh material conditions in determining the structure and functions of society. If we may at this point venture on a criticism, it will be to say that the battle between the materialistic and the ideological interpretation of history is perhaps somewhat profitless. It seems to me that the correlation, the concomitance, or whatever word we like to use to express the connexion between man's physical and mental characteristics, is so intimate and far-reaching that it is impossible to construct a theory of the origin and development of society which does not include them both. The evolution of society is the result of the combined operation of physical and mental needs, and it is a more philosophic method to recognise their indissoluble concomitance than to argue about the insoluble question of precedence.

In the first four chapters or lectures Prof. Stein establishes the competence of philosophy to deal with the social question. The social question of late has been regarded as lying entirely within the domain of political economy; and it is not to be denied that in so far as the social question is economic in its character political economy must exercise a paramount influence in its discussion. But the solution of the social problem, if it is a problem which admits of being solved at all, is a task beyond the powers of the economist. Centuries before political economy as an exact, or comparatively exact, science came into existence the social question occupied the attention of philosophy. It was discussed from this standpoint by the Cynics, by Plato, and Aristotle, and in modern times by almost all the most important leaders of social thought. Men such as Morelly, Rousseau, St. Simon, Fourier, Proudhon, Lassalle, Marx, and Engels were in the first place philosophers rather than economists. Even Adam Smith himself, the father of modern political economy, was a teacher of philosophy. But apart from these facts philosophy is entitled to say the supreme word on the social question, if we accept the definition of philosophy which has been formulated in recent times by such men as Comte and Wilhelm Wundt. According to these writers philosophy is the highest generalisation of all the sciences combined as far as possible into a harmonious whole. The task of philosophy consists in looking at the social question in the light

of these generalisations, and if the social question is to be embraced in its entirety it must be looked at from this point of view. When the social question is regarded in this comprehensive manner it is seen to possess an ethical and religious as well as an economic character. The solution of the economic problem would not put an end to social unrest. Even if Fourier's dream were realised or the prediction of Siemen's that food will one day be produced in inexhaustible quantities from inorganic substances the social question will remain to torment the world if men's ethical and religious needs are still unsatisfied. In fact, the satisfaction of our animal needs will be immediately succeeded by the demand for the satisfaction of our human needs; and to assure the material basis of existence for all will be at best an ineffective step, unless ample nourishment is also provided for the mental and moral interests of all. In the Middle Ages the Church provided successfully for the immaterial cravings of the mind and heart. In a certain degree it does so still. But modern criticism has laid an unsparing and ruthless hand on the ecclesiastical synthesis so elaborately constructed by the mediæval world, and Dr. Stein considers it is losing its hold not only in educated circles but also among considerable sections of the masses as a trustworthy or acceptable conception of life and of the totality of things. "Ni Dieu ni Maitre" is an ominous watchword. It indicates religious as well as economic bewilderment. The only remedy for this formidable condition of mind and temper is, says Dr. Stein, a sound system of social philosophy. At the present time the word Socialism is beginning to exercise the same electrifying effect on the popular mind as the word Liberalism used to do. One of the objects contemporary social thinkers should aim at is to give the word Socialism a deeper and more comprehensive meaning. It should be made to mean more than mere economic collectivism. It should be construed so as to represent the reconciliation and harmonious co-operation of individual and collective interests. It should be a word of the highest ethical and religious import; it should stand for the religious as well as the economic ideal. In short, the significance of the word should be heightened till it becomes a synonym for all the highest material and ideal interests of humanity.

Dr. Stein attempts to show how this truly gigantic task is to be accomplished in the third division of this book. In this division he lays down the principles of a system of social philosophy in a series of chapters on the individual, the state, society, property law and religion. It would not be fair to Dr. Stein to attempt to summarise his position on all these important matters. Dr. Stein's view of property is not what is ordinarily understood as socialistic. He admits that property was originally held in common, and that in course of time if a more satisfactory social organisation does not arise than the present one property may again be taken possession of by the community. But he considers

that the time for such a revolutionary step has not yet come, and need never come if our conceptions of property are modified to suit the developing exigencies of social life. He even considers that private property may be made to exercise a moralising effect on the community. This would no doubt be the case if the ethical standards of the holders of private property were sufficiently high; and it is a part of Dr. Stein's scheme of the social future that the holders of property shall be so effectively socialised as to realise all the social obligations which the possession of property entails. In society as it exists at present the principle on which the owner of property usually acts is to give as little and to take as much as he can, and the man who is most successful at this sort of thing is the man who generally acquires great possessions, and along with them a vast amount of power over his fellows. It is certainly undesirable that this type of person should exercise the dominating influence which is now his. The abolition of private property would put an end to this undesirable social type; but it would be possible to suppress it and also many of the other evils connected with private property if we had what Dr. Stein describes as the Socialisation of Law.

According to Stein it is in the direction of the Socialisation of Law (*Rechtssocialismus*) that we must move if we mean to establish a higher order of social justice and social well-being. In the past law has in too many instances been developed in the interests of powerful individuals and powerful classes, and it still retains the stamp of its origin. The immediate task of the future is to adjust law to social needs and social interests till it becomes the codified expression of the modern conception of justice. One of the most potent causes of unrest at the present time is the conflict in the existing order of society between the opposing principles of liberty and equality. The principle of liberty aims at securing and upholding the interests of the individual. The principle of equality aims at holding the individual in check, and compelling him to subordinate his purely personal interests to the interests of society as a whole. It is unbridled industrial liberty with inequality on a stupendous scale as its inevitable accompaniment which is mainly responsible for the present social crisis. This crisis will continue and tend to become more acute until the conflicting demands of liberty and equality have been adjusted. The only way in which the process of adjustment can be proceeded with is by the Socialisation of Law. State socialism cannot harmonise liberty and equality. In fact State socialism has had its day. Its principles and methods have been shattered by criticism. Its prestige is rapidly on the wane in Germany—its place of birth. For the last generation or so the State socialists have had it all their own way. But they have been unable to formulate any definite and coherent system. It is on other principles and by other methods than these that the social question must be approached. According to Dr. Stein, the social problem in so far as

it is concerned with the reconciliation of liberty and equality must be approached from the standpoint of *Rechtsocialismus*. From this standpoint liberty is seen to be a relative term. Such a thing as absolute liberty never has existed and never can exist. The only liberty we know of worthy of the name is liberty within the law. In the same way there is not, and cannot be, such a thing as absolute equality. Equality before the law is the only feasible form of equality among civilised communities. Both liberty and equality in so far as they are realities are the creation of law, and are dependent upon law for their existence. Inasmuch as their conflicting principles are the creation of law it is only through the instrumentality of law that they can be harmonised. Law must develop with developing social requirements. The lines of its future development must be social lines, and the conscious aim of law working on socialised principles will be to secure a maximum of liberty with a minimum of inequality. One of the means by which this end shall be attained is what Dr. Stein describes as economic *proportionality*. Economic equality is plainly unattainable, but law can secure a large amount of economic proportionality. The fruits of labour are not distributed in their just proportions among the people who have co-operated in producing them. This evil and all the misery which it involves is the result of the unbridled liberty allowed to individuals in the present industrial system. A socialised system of law would put an end to the evil, by introducing and enforcing the principle of proportionality in all industrial relationships. In this way the sentiment of liberty would be respected on the one hand and the sentiment of equality on the other. But neither would be allowed an undue dominance.

For an exposition of the various practical developments which the socialisation of law would involve the reader must be referred to Dr. Stein's book. Among these developments the socialisation of law would guarantee the right to exist, and probably the right to labour. In fact all matters relating to the position of labour and the labourer, such as the national organisation of labour, the hours of labour, the protection of the labourer, the organisation of the labouring classes belong to the sphere of *Rechtsocialismus*. But *Rechtsocialismus* does not seek the solution of this and similar social problems on the lines of social democracy. According to Dr. Stein the social democratic movement is in the main merely a class movement. It aims at representing the interests of the industrial proletariat only, and the accomplishment of its programme would necessitate the destruction of the modern state. But the programme of the socialism of law embraces the interests of all classes and sections of society and aims at conserving the modern state by bringing all institutions within it into closer agreement with the principles of science, humanity and justice.

According to Dr. Stein religion requires to be socialised as well

as law. He considers that theism still maintains its hold over the modern world, and that historic ecclesiastical institutions only require a clergy in full touch with the age in order to become a vast socialising power. If ecclesiastical institutions bury themselves in the past and refuse to look the problems of the present unflinchingly in the face they will ultimately become things of the past. The permanence of these institutions depends on the extent to which they can make themselves the organs of living issues. Dr. Stein considers that a movement in this direction is slowly taking place among the churches of Christendom. If this movement should develop it will have the effect of facilitating the solution of several grave questions which are at present a danger and an embarrassment to western civilisation. For Dr. Stein's views on the socialisation of art, science, education, and on international peace the reader will have to consult the concluding chapters of his suggestive book. It would not be difficult to find fault with some of his conclusions, and perhaps to regard his judgment as having been somewhat hastily formed on certain points. In a work covering such a wide field and dealing with so many complex problems this is to be expected. At the same time it must be said that Dr. Stein has performed an extremely difficult task with remarkable comprehensiveness and ability. His work is loaded with thought on almost every page, and whether we agree with him or not he seldom fails to help us in clearing our own minds.

W. D. MORRISON.

Logic, Deductive and Inductive. By CARVETH READ, M.A.
London: Grant Richards, 1898. Pp. 323.

THIS book may be briefly described as a very compact and convenient logical manual, and I know of nothing which seems to me better for learner or teacher, within the compass of a single very moderate volume. It challenges comparison with Jevons' *Elementary Lessons* on the one hand, and with Mill and Dr. Keynes on the other, being fuller and more complete than the former, and much briefer of course than Dr. Keynes and Mill in the treatment of Deduction and Induction respectively. Yet it might be said that almost nothing of interest or importance in Keynes or Mill has been left altogether untouched. That this should be so, and yet that the book should be, as it is, lucid, pleasant to read, and without any appearance of overcrowding, says a great deal for the writer's judgment and powers of exposition. Mr. Read is never careless, fantastic, dull, or obscure. He is especially good in illustration (*cf.*, e.g., chapter xvi., *The Canons of Direct Induction*, and chapter xvii., *Combined Induction and Deduction*, and the section on *Explanation* in chapter xix.); and this is one of the strongest points—perhaps the strongest—in his book. He never fails to give an illustration where it is

wanted, and the illustrations are never inappropriate or trivial, though sometimes they seem to be of the nature of a joke.

It has been said by a great writer on ethics that there is general agreement as to what Virtue is—that “there is in reality an universally acknowledged standard of it. It is that which all ages and all countries have made profession of in public; it is that which every man you meet puts on the show of; it is that which the primary and fundamental laws of all civil constitutions over the face of the earth make it their business and endeavour to enforce the practice of upon mankind.” Yet—as a later writer tells us—“on its speculative side it has been, and it still is, the centre of apparently endless controversy—the subject of every species of confusion”. And *mutatis mutandis*, the same paradox seems applicable in Logic, and more especially that core of Deductive Logic which has remained in essentials unchanged from Aristotle to Mill. (How far, apart from the direct acquisition of fresh information and from metaphysical and psychological principles, it includes ‘Inductive’ Logic is a point which Mr. Read seems to decide in favour of inclusion—*cf.* p. 193.) Most of us know, and are agreed, *what* good reasoning—cogent syllogism or trustworthy Induction—is, but *why* it is good, what the theory of valid inference is, is regarded as matter of doubt and difficulty. Thinkers who believe themselves to base all knowledge upon ‘particulars,’ and those who start from universal principles, are equally capable of estimating or discovering scientific truth; those who insist upon the importance in logical theory of a careful and unremitting reference to context, and those who treat propositions symbolically and thus of necessity leave particularities of context out of account would for the most part be in entire agreement as to the validity or invalidity of any clearly understood argument. And those who appear to “identify” Psychology and Logic, are just as keen as others to detect an inference that is not logical. These well-worn reflections are suggested by Mr. Read’s book, partly because of the list of writers to whom he refers in his Preface, partly because he succeeds to a great extent in carrying out his intention of treating the recognised body of logical doctrine in separation from speculative theory—from the more disputable matter of Psychology and Metaphysics—and partly because they receive interesting though perhaps superficial illustration from comparison of the present book with the author’s *Theory of Logic* published in 1878 and reviewed by Dr. Venn in MIND for that year. Nothing could well be more striking than the unlikeness between the two works in many respects—in form, in purpose, in statement, in some theoretical explanations of accepted logical doctrines. But the logical core of both is essentially the same—indeed in this case, more than the core, since in reality the same matter-of-fact view is on the whole kept, and the same school of writers adhered to. And it is further interesting to notice how both books are

marked by similar intellectual characteristics, though the vigour which in the first was shown in new ways of seeing, expressing and explaining "old truths," and in an exuberance of new terms and symbols, is in the latter work apparent in clearness and freshness of exposition, and abundance of illustration, devoted to the service of traditional doctrine and expressed in current terminology.

In the Preface to the present book, Mr. Read mentions Mill, Prof. Bain, Dr. Venn and Dr. Keynes as the writers to whom he is chiefly indebted, and he refers besides to Mr. Bradley, Mr. Bosanquet and Mr. Alfred Sidgwick (among English authors). To the latter of these (together with Mr. Thomas Whittaker and Prof. C. M. Thompson) he expresses gratitude for advice on various points. In the Deductive part of his book, Mr. Read has taken advantage of Dr. Keynes' improvements on preceding Formal Logicians, and has thus given a much more complete and systematic account of, e.g., Immediate Inferences than Jevons or any other previous writer. And that he has not been uninfluenced by Mr. Bradley's and Mr. Bosanquet's writings, and Mr. Alfred Sidgwick's, may be inferred from the general effort after continuity and unification of subject which marks his work, in his references—implicit or explicit—to that analysis which must have preceded synthesis in Logic, to the effect of context on meaning, and to the 'artificiality,' the relativity to human purpose, of classification, etc. But wherever the work of the writers referred to has led to discussions or considerations impossible to be presented without great complexity, at that point Mr. Read generally ceases to follow them—e.g., in reference to "Predication and Existence," the distinction between "Conditionals" and "Hypotheticals" as two distinct kinds of propositions of the form *If A, then C*, the Quantification of the Predicate, the liability of human faculties to error in observation and perception, the relation between Causation and Co-existence, the interpretation of the Law of Identity, the nature of mathematical truth, immediacy of succession in Causation.

No doubt there are excellent reasons for this; a handbook is not the place for raising doubts that cannot be solved, or at least laid to rest; and I think that what can be done in the way of a brief clearing up of difficulties great or small (often only difficulties on the surface, but none the less puzzling on that account) and of reconciling apparent contradictions, has been done over and over again by Mr. Read in this book with surprising skill and success. Cf., e.g., his treatment of *Inductive Method*, chapter xv., and of the relation between Induction and Deduction, his recurrence to *Suppositio* as a substitute for *Universe of Discourse*, his explanation of the saying, *Exceptio probat regulam*; and the treatment of Classification, and Nomenclature and the Predicables, in chapters xxi. and xxii., though brief is very elucidating. "Let us," he seems to say, "go as far as may be without plunging into any metaphysical or psychological quagmire; let us spare

no pains to do what we *can*, but let us also recognise clearly what we *cannot*, and cease to waste time upon it." The spirit and temper of the book in this regard are indicated in a sentence on p. 194, in which the author is referring to those difficulties of ascertaining "exact equality" and "immediate sequence" of phenomena which are due to the limitation of human faculty. "It is right," he says, "to touch upon this well-known sceptical topic; but to insist much upon it is not a sign of good sense."

That this treatment has advantages from some points of view has just been allowed; but it must be admitted that in some cases Mr. Read's "short way with the sceptics" does not seem to lead to results satisfactory even from those points of view. Take, e.g., his account of the relation between Logic and Mathematics, or his treatment of the Laws of Thought, and of the connexion between Causation and Co-existence. On this view Mathematics seems to be almost (though perhaps not quite) a Science co-ordinate with Logic, and is described as dealing throughout with abstractions. Thus Logic is *not* all-embracing, *not* the Science of Sciences, after all—and Mathematics has the air of being separated by an impassable chasm from the world of concrete fact.

"Mathematics," it is said, "treats of the relations of all sorts of things considered as quantities," while Logic "treats of the relations of all sorts of things, but not as to their quantity" (p. 7)—(this is indeed somewhat qualified by the recognition that "Logic may be said to be in some respects 'prior to' or 'above' Mathematics as usually treated," p. 8). Again, "As to Co-existences, the Geometrical do not belong to Logic" (p. 146), and "Geometrical Co-existence, when it is not a matter of definition . . . is deduced from the Definitions and Axioms" (p. 233). The process of Geometrical proof "is purely Deductive; . . . Diagrams are used not as facts for observation, but merely to fix our attention; . . . no inference is required from the special case to all similar ones; for they are all proved at once" (p. 166). And we even have the "falling of absolutely true dice" contrasted as "mere mathematical abstractions" with "concrete events" (p. 248). "The Mathematical Axioms again," we are told, "apply to Time, Space, Mental Phenomena, and Matter and Energy; whereas the Law of Causation is only true of concrete events," etc. (p. 225).

These contentions (though they certainly stop short of some obvious difficulties) are at least disputable, and to a large extent they appear to be even obviously paradoxical. Surely *all* the rules of Logic apply in mathematical reasonings—if quantities as such are not subject to logical treatment, it would seem that all the world of phenomena in some of its aspects (and those the most definite and precise) is extra-logical. And when it is said that "the Law of Causation cannot be derived from the Mathematical Axioms, nor these from the Logical" (p. 226), it may be replied that it is not only *Mathematical* principles which cannot

be deduced from Logical ones; the same is true of the rules of relation in every 'system' or body of related facts or things—of family and political relationships, of the parts of any organism or machine, even of the causal relation of succession in time.

It is perhaps partly to this drastic separation from Logic of Mathematics, with its imposing system of inexhaustible co-existences, that is due Mr. Read's slighting treatment of Co-existence in comparison of Sequence (in which he follows Mill). Dr. Venn goes far towards recognising that Co-existence is of no less importance for Induction than Succession is; and it is difficult to see how it could ever have been seriously doubted that uniformities of Succession must presuppose uniformities of Co-existence.

The principle of Identity, says Mr. Read, "assumes that something is, and that it may be represented by a term . . . further, it is assumed that of the same thing another term may be predicated again and again in the same sense". How a "principle" that is fairly expressed as *A is A* (or even *If B is A, B is A* which Mr. Read prefers) can have any logical connexion with the assumption that "of the same thing another term may be predicated" it is not easy to see; and indeed it is perhaps too much to expect that as long as a Law of Identity expressible as *A is A* is put forward as a fundamental Law of Thought—of Thought which proceeds by judgments of the form *S is P*—anything satisfactory should or could be said on the subject. After Lotze's determined effort and signal failure, the case may well seem hopeless.

The following account of the two other "Laws of Thought," the Principles of Contradiction and Excluded Middle, is interesting but perhaps a little fanciful. They are, it is said, inseparable; "implicit in all distinct experience, and may be regarded as indicating the two aspects of Negation. The principle of Contradiction says: *B is either A or not-A*, as if *not-A* might be nothing at all; this is abstract negation. But the principle of Excluded Middle says: *Granting that B is not A, it is still something*—namely, not-A; thus bringing us back to the concrete experience of a continuum in which the absence of one thing implies the presence of something else. Symbolically: to deny that B is A is to affirm that B is not A, and this only differs by a hyphen from B is not-A. But if any one holds that the hyphen makes all the difference, I give it up."

To sum up, it may be said that Mr. Read does not perhaps undertake to carry us, in Formal Logic, much beyond current handbooks, nor in Induction much beyond Mill; and granting this, he is somewhat better than his undertaking, and though careful not to innovate, he does his readers the service of putting them at a point of view from which the ultimate unity of Logic, and final elimination of contradictions between opposing views, seem natural as well as desirable. It is difficult without going into elaborate detail, to convey the impression of compactness, vigour, keenness, and unsparing pains which a perusal of the

book gives—all these working within the limits of traditional doctrine and terminology, and resolutely trying to make the best of them. Still I should like to give an extract or two by way of example, and will take the following brief expositions of (1) the relation between Induction and Deduction, (2) the non-plurality of Causes, which seem to me admirable for their purpose :

(1) "In any question of general truth, induction and deduction are mutually dependent and imply one another. This may be seen in one of the above examples. A argues that a certain metal is copper, because every metal is copper that turns green when dipped in vinegar. So far his proof appeals to a general proposition and is deductive. But if B asks how he knows the general proposition to be true, A alleges experiments or facts ; and this is inductive evidence. Deduction then depends on Induction. But when B asks, again, how any number of past experiments can prove a general proposition, which must be good for the future as well as for the past, A invokes the uniformity of Causation ; that is, he appeals to a principle, and that is again deductive proof " (p. 4).

(2) "A fire may certainly be lit in many ways ; with a match, or a flint and steel, or by rubbing sticks together, or by a flash of lightning : have we not here a plurality of causes ? Not if we take account of the whole effect ; for then we shall find it modified in each case according to the difference of the Cause. In one case there will be a burnt match, in another a warm flint, in the last a changed state of electrical tension. And similar differences would be found in cases of death under different conditions, as stabbing, hanging, cholera ; or of shipwreck from explosion, scuttling, tempest. In fact if we knew the facts minutely enough, it would be found that there is only one cause (sum of conditions) for each effect (sum of co-effects), and that the order of events is as uniform backwards as forwards " (p. 156).

In conclusion, I will quote the following brief reflexion which seems to me as true as it is fresh :—

"It is better to be vaguely right than exactly wrong. In the criticism of manners, of fine art, or of literature, in politics, religion and moral philosophy, what we are anxious to say is often far from clear to ourselves ; and it is better to indicate our meaning approximately, or as we feel about it, than to convey a false meaning, or to lose the warmth and colour that are the life of such reflexions " (p. 272).

E. E. CONSTANCE JONES.

Studies in Psychical Research. By FRANK PODMORE. London : Kegan, Paul, Trench, Trübner & Co., 1897. Pp. ix., 458.

"PSYCHICAL" phenomena are, as it were, the Dreyfus case of Science. Their non-existence has to be accepted as a *chose jugée*,

without inquiry into the means by which their condemnation was secured. Public curiosity must content itself with assurances that all the high priests of Science concur in the condemnation and regard all discussion of the case as fraught with the gravest danger to the republic, that their existence is avouched only by a conspiring syndicate of all the superstitions, and that to doubt the infallibility of the very summary court martial which relegated them to the company of Beelzebub in the 'Island of the Devil,' in the time and under the logical auspices of David Hume, is high treason to Science and subversive of the whole natural order of the universe. Such are the sentiments of the conservative party which would rather run the risk of sacrificing a little inopportune truth than upset men's minds and the authority of Science, and which, needless to say, is full of honourable men actuated by a sincere sense of public duty. Yet they would do well to recognise the existence, on the other side, of a growing number of "intellectuals" who are convinced of the necessity of a revision of the wholesale condemnation of these phenomena. These 'revisionists' are not without their internal differences; some demand revision as a matter of policy, others as compliance with the principle of *fiat justitia ruat coelum* (though they probably do not believe that the heavens would fall or the order of nature be subverted by the recognition of any fact however strange); some believe that much new truth may be learned from inquiries which others expect only to extend our knowledge of the nature and possibilities of human error. But they agree that the doubts which existed in the public conscience as to the treatment which this side of experience had received in the past could be removed, not by assertions and denunciations *a priori*, but only by a serious and sustained investigation in detail. And so they organised themselves in 1882 into the Society for Psychical Research, in which Mr. Podmore has been from the first a most active and valuable member. He is consequently one of the very few who are (or ever have been) entitled to speak with authority on the subject, and his pronouncements appear to all the greater advantage by reason of the manner in which they are put forth. For Mr. Podmore has produced a singularly interesting survey of his subject, written in a lucid and effective style and adorned with many terse and caustic phrases.

His results are briefly these—Spiritualism is a religious rather than a scientific movement, and its votaries are in general little concerned to assist in a scientific study of their 'experiences'. Their 'mediums' are without exception detected cheats, and moreover just now hardly any are available, while their exhibitions do not present even a *prima facie* case for investigation. The stronger evidence for past marvels is ingeniously minimised. The Dialectical Society's Report is criticised for not giving the names of the sub-committee which succeeded in table-turning without contact. Zöllner is regarded as a victim of Slade's conjuring tricks, and as having given him opportunities for fraudulent

substitutions in the 'test' objects. Stainton Moses' phenomena derive their evidential value from the strong presumption of his honesty, but he may have been a conscious, unconscious or semi-conscious fraud. Under the circumstances this is perhaps unlikely, but we have to choose between a moral and a physical miracle (p. 133). Home's case, supported by much experimental testimony from Sir W. Crookes and the Earls of Crawford and Dunraven, is treated with more respect. Still Mr. Podmore gets over this *mauvais pas* also, by supposing that the witnesses were to some extent hallucinated. Collective hallucinations are possible—especially if we admit telepathy—and the conditions of a *séance* are calculated to produce them. And Home may have eked out deficiencies in the actual events by his suggestions. *E.g.*, he really took live coals out of the fire, and his sitters believed that he handled them with impunity (and sprinkled them over their hair and handkerchiefs!), nay he "possibly on some occasions held them in his hands," protected by "some non-conducting substance" (what?); "he really stretched himself to his full height"—and his sitters recorded his elongation by ten inches; "he thrust his head and shoulders out of the window"—and seemed to them to have floated from one room into another seven feet distant seventy feet in the air! (p. 121-2). After this, "*poltergeists*" are easily ascribed to the trickery of naughty girls helped out by a little "sensory illusion conditioned by the excited state of the percipients" (p. 158). An entertaining account is given of the 'theosophic' career of Madame Blavatsky. The evidence for experimental thought-transference, on the other hand, Mr. Podmore considers sufficient to establish the fact, and with its aid he goes on to explain away ghosts, collective and death-apparitions, considered as proofs of *post-mortem* spiritual agency. From the same point of view, haunted houses are defective; there is little evidence of identity and purposiveness, and much to show that the apparitions are subjective and stimulated by antecedent auditory disturbances. The evidence for *préconitions* is disappointing both in quantity and in quality and may be assumed to be greatly vitiated by illusions of memory. In chapter xii. the spontaneous phenomena of secondary consciousness are held not to warrant Mr. Myers' theory of a co-existent and extensive 'subliminal self,' while the distinct personalities of the French experimental cases are considered to be largely artificial and built up by suggestion. On the whole, they are "not a prophecy but a survival," restoring "a more primitive stage of consciousness" (p. 413), which has ordinarily given way to the more effectual organisation of our work-a-day selves. Lastly, in his concluding chapter on obsession and clairvoyance, Mr. Podmore comes upon a second set of phenomena which gives pause to the *élan* of his scepticism, *viz.*, Prof. James' "white crow," Mrs. Piper. The evidence produced in connexion with her trances proves at least thought-transference, but requires that theory to be strained to the uttermost. And,

especially in its latest developments, it forms, Mr. Podmore concludes, "the most important evidence which the Society for Psychical Research has yet adduced for the existence of something beyond telepathy". This will not be esteemed an overstatement by any one who has read the remarkable testimony contained in No. xxxiii. of the *Proceedings of the Psychical Society*, and knows how to attribute due weight to the conversion which it has effected of Dr. Hodgson, the greatest expert in these matters and the hero of a hundred exposures, to what is substantially the much decried spiritist theory of the phenomena.

The above abstract of Mr. Podmore's results necessarily fails to do justice to the ingenuity of his reasoning and the effective use he makes of the documents collected by the Society for Psychical Research. But it suffices to show that he is the most sceptical of psychical researchers. Indeed he sometimes arouses a feeling that here is scepticism 'strained to the uttermost,' or at least the high-water mark of reasonable doubt. For my own part, I should sometimes prefer complete suspense of judgment to forced explanations which derive their validity only from the assumed antecedent improbability of the facts alleged.

Nor do I find myself altogether in harmony with Mr. Podmore's attitude towards the spiritists. It is of course the fashion to represent them as a body of deluded maniacs, for whom it is impossible to say a good word without destroying one's reputation for intellectual sanity. Yet it is undeniable that much of the best evidence on these subjects concerns some of the most anomalous spiritistic phenomena. And Mr. Podmore by no means always succeeds in disposing of it completely. In other words, spiritism adduces some of the best as well as some of the worst of the evidence. Mr. Podmore's method is to interpret the former in the discreditable light reflected on it by the latter. But it is possible to make too much of the credulity of the vulgar spiritists. The vulgar are always credulous, and their convictions, *as expressed by themselves*, always rest upon inadequate foundations. It ought to be recognised as a general principle that lay evidence upon a subject of scientific debate can yield at the utmost scientific suggestion, but never scientific proof. For all that the history of science shows that the vulgar beliefs have often been right (*cf., e.g.*, the belief in meteorites, fire-balls, giant cuttle-fish, the connexion between barberries and wheat-rust, and the still disputed existence of 'telegony' and sea-serpents). It is therefore the strongest and not the weakest evidence which must be considered, and due care must be taken to apply to each sort of evidence the canons of criticism appropriate to it. It is, for instance, well known that in ordinary life no two witnesses tell quite the same tale independently. Hence discrepancies are here a guarantee of good faith, whereas in scientific observations they would provoke distrust. Even the credulity of ordinary spiritist audiences in succumbing to trickery deserves perhaps more lenient

treatment than Mr. Podmore accords to it. It is, after all, largely the result of the social neglect to examine the facts, of the social acquiescence in conditions which provoke deception and render it easy. And if we regard the spiritists, as Mr. Podmore rightly points out they should be regarded, not as a scientific but as a religious sect, their credulity will not appear excessive. On the contrary, it will be seen that they must absorb an unusual amount of criticism in their faith. For its believers, almost without exception, are converts, *i.e.*, were originally disbelievers, and convinced themselves by evidence which seemed to them sufficient. And, moreover, they were convinced not by abstract argument, but by concrete and somewhat coarsely material facts—which sufficiently explains the philosophic defects in their creed noted by Mr. Podmore. But once a spiritist is thoroughly convinced by what he believes to be irrefragable fact, his critical vigilance towards similar phenomena necessarily relaxes. And why should it not? Does not the same rule hold good elsewhere? If I am once convinced of the *bond fide* performance of a scientific experiment, I am not so much interested in its repetition, and so more easily imposed on by fraudulent imitations. Rumour has it that this principle is sometimes illustrated also by illegitimate precautions taken to secure the success of scientific experiments before popular audiences. At least there is a tale of a famous physicist who used to inflame his fire-sticks by friction—not without the surreptitious aid of a little phosphorus. Yet had I been a spectator at such an exhibition I should be a fool, not if I ascribed the fraud to the conditions of the performance, but if I inferred that friction could not produce fire. And the convinced spiritist may look at the frauds of the mediums in much the same way. Nor is he unreasonable from his own point of view. But his point of view is not that of science, and such tainted evidence is rightly considered to have no efficacy in producing a belief that has yet to be established. If the spiritists are indifferent to proselytism that is their own concern, but they are not necessarily beyond the pale of human reason.

Nor, again, is their theory as such logically inadmissible. It is no doubt often crudely stated—by people whose accounts would state any theory crudely, and, as Mr. Kipling says, would ‘discredit the creation’. It is no doubt of exceeding antiquity, and so susceptible of being construed as “an instinctive utterance of primitive animism” (p. 18). But the opposition to these supernormal phenomena is equally antique, and it might as reasonably be suggested that the attitude of modern science only continues the instinctive dislike which everywhere has led to the prohibition of ‘sorcery,’ to the burning of ‘witches,’ and to the ascription of the phenomena generally to the agency of the devil. As Mr. Lang so well points out, the coincidences in the details of superstitions cannot be explained by tradition or collusion. The truth is that the ‘spirit’ theory rests upon spontaneous and persistent

peculiarities of the alleged facts themselves, and forces itself as a working theory even upon the most cautious and patient observers (as shown, e.g., by the recent admissions of Dr. Hodgson with regard to Mrs. Piper's trances). The real offence of the spiritists with respect to it is that they do not use it as a scientific theory, as a basis for further investigation, but proceed to get absorbed in such of its practical corollaries as satisfy their emotional needs. But this simply shows that their motives are emotional, and not scientific.

To pass from a palliation of spiritism to that of the opposite extreme, *viz.*, of invincible scepticism, I cannot think Mr. Podmore's critical *via media* is likely to be more acceptable. He cannot hope to propitiate the implacable, the fanatic of an *a priori* scepticism. For in spite of all his scepticism Mr. Podmore is a revisionist, a man of open mind, a disbeliever in the policy of the *chose jugée*. A thoroughgoing champion of science considered as orthodoxy, therefore, can as little welcome Mr. Podmore's book as any other 'revisionist' publication. For he needs no argument to dispose of the phenomena he rejects. If he is truly logical, he rejects them *a priori*. Such phenomena subvert the whole system of science; *ergo* they are miracles; *ergo* they are impossible; *ergo* no testimony can in the slightest affect their incredibility. For it is always more probable that all sorts of improbabilities should have coincided, that any amount of testimony should be false, than that 'the thing that couldn't' should have occurred. Hence the sceptic *à la Hume* would make short work of what even Mr. Podmore would spare. In spite of Mr. Podmore's protestations (p. 8) that it is only a harmless working theory involving nothing transcendental, telepathy is just as obnoxious as the most startling of spiritist wonders. There are no degrees of the impossible. And with sufficient firmness in assuming hyperæsthesia, hallucination, mendacity and collusion all Mr. Podmore's best evidence could be got rid of. Indeed my only difficulty is to conceive what evidence would *not* yield to such solvents, what evidence could ever prove anything but a foregone conclusion. But such scruples would not perhaps perturb the Humian; he is safe unless he should be induced to descend into the arena of discussion, where weakness of the flesh might overcome him and tempt him to listen to the arguments of others or the testimony of his own senses.

And yet perhaps there is a logical flaw at the heart of his position. That any fact should really subvert the scientific order of nature seems infinitely more 'antecedently improbable' than the weirdest of alleged miracles. Yet the initial assumption of the Humian position is that certain disputed phenomena really would subvert the scientific order of experience.

That assumption is one which no 'intellectual' revisionist would accept. It issues from a deep distrust of the scientific order which it pretends to protect. It is necessarily unwarranted

by the facts which it rejects. For until the facts have been submitted to dispassionate scientific examination, it cannot possibly be asserted that they do not connect with admitted truth. As a matter of fact the connexion has not been made chiefly because no one has tried to make it. The people who did concern themselves with the alleged facts did not pursue scientific ends and so did not devise scientific theories; those who did not, made the indiscriminate ascription of the phenomena to spirits or devils a pretext for declaring them to be essentially incapable of scientific investigation. But as soon as any one looks for order, order begins to appear out of chaos, and hence, Sir W. Crookes' recent declaration in his presidential address to the British Association, that he is beginning to see "something like coherence among the strange and elusive phenomena, something like continuity between these unexplained forces and laws already known," is highly significant. The truth is that the true scientific spirit is all-pervasive, that the true scientific method is of universal application—to the psychology of angels, demons and spirits, if such things there be, as to that of men and beasts—what has hitherto been lacking has been the will to apply it.

But the feeling is growing that the time is approaching for the extension of science to regions of apparent experience hitherto abandoned to superstition, and Mr. Podmore's lucid survey of the field and critical sifting of the evidence cannot but contribute to strengthen public confidence in the work the Society for Psychical Research has carried on with so much patience and pertinacity. A hasty reader might indeed draw the inference that Mr. Podmore's results are mostly negative—nay, that telepathy itself was only a technical term to conceal a negation. But it cannot be too strongly emphasised that negative criticism like Mr. Podmore's is on a totally different plane from that which prevailed twenty years ago; it is criticism of the imperfections of a body of evidence which could not have come into existence but for the labours of the Society of Psychical Research. And the defects which he criticises are in most cases such as can be removed by improvements in the quantity and quality of the evidence. Such improvement there has been and will doubtless continue to be if the social factor continues favourable. This indicates a characteristic of 'psychical research' which might well have been emphasised by Mr. Podmore. So long as the subject is in its observational stage its progress necessarily depends largely on social sympathy. It is not enough that society should have desisted from its ancient sport of eliminating psychical sensitives at the stake. The superstitions and social fears which render so much evidence inaccessible or valueless must be abated, and be succeeded by an interest or co-operation which will lead to an intelligent observation and adequate recording of an appreciable fraction of such phenomena as spontaneously present themselves. For though we are like astronomers watching for sporadic comets that flare across the spiritual sky, we

can at least take care that none escape our notice nor fail of proper record. Of course if means could be devised for making the phenomena more experimental, the rate of progress might be greatly accelerated. But even so in view of the resistance which the violent prejudices of the extremists on both sides will continue to offer to a scientific revision of their beliefs, in view of the emotional perturbation which the investigation of such delicate matters seems so often to involve, it would require a sanguine man to expect any settlement of the subject in the next fifty years.

F. C. S. SCHILLER.

A Treatise on Universal Algebra with Applications. Vol. I. By ALFRED NORTH WHITEHEAD, M.A., Fellow and Lecturer of Trinity College, Cambridge. Cambridge: University Press, 1898. Pp. 586.

IN consenting to review this important volume for the readers of MIND I fear I have undertaken a task for which I am but indifferently qualified. My belief, before I received the book, was that it was almost wholly devoted to a discussion of the general principles of symbolic reasoning, with occasional appeals to mathematics and geometrical diagrams by way of illustrations. But this is not the case. Only a comparatively small portion of the work is devoted to what may fairly be called the general principles of symbolic reasoning; the rest is taken up with applications of these principles, as the author understands them, to the elucidation of Grassmann's *Calculus of Extension*. Now, of the latter work I know nothing except what I have been able to learn from Mr. Whitehead's presentation of it, and from a few references to it by other writers. So far as I can judge from these data, Mr. Whitehead has rendered great service to science by reducing to a comparatively simple and workable form a method of research which, as originally presented by its inventor, was, from all accounts, extremely obscure and difficult to apply.

In forming an opinion on the first portion of Mr. Whitehead's work (especially book ii., which treats of Symbolic Logic) I feel myself on surer and more familiar ground. Yet even here I find myself somewhat in a difficulty. Mr. Whitehead and I regard the subject of Symbolic Logic from different standpoints; and this fact renders it no easy matter for me to do full justice to his work. Alone, or nearly so, among logicians, I have always held the opinion, and my recent studies have confirmed it, that the simplest and the most effective system of Symbolic Logic is that whose elementary constituent symbols denote—not classes, not properties, not numbers, ratios, regions, or magnitudes, not *things*,

of any kind—but *complete statements*. By a ‘statement’ I mean any sound or symbol, or any combination of sounds or symbols, employed to convey information. A subjectless and predicateless sound or symbol, like the warning “caw” of a sentinel rook, or the national flag of a passing ship, may be called an *elementary* statement; the formal grammatical propositions of ordinary spoken or written speech may be called *complex* statements. The ultimate units of expressed thinking, whether those units be individually communicated to ear or eye by single symbols or by many, are *statements*; and in no sphere or region of investigation can reasoning be expressed without those units. Since, therefore, statements, and statements alone, constitute the ever indispensable elements of all expressed reasoning, we should, in my opinion, first investigate the mutual relations of these statements, representing each by its own independent symbol, and call this process of investigation *Pure Logic*. The moment we begin (as in mathematics and in the traditional logic) to represent *things*—things which are not statements—by separate symbols, we are no longer in the domain of *Pure* (or *Abstract*) Logic, but in that of *Applied Logic*. A system of Symbolic Logic thus built up wholly of statements has one great advantage which no other system can possibly possess, namely, the advantage of *homogeneity of matter*. Mr. Whitehead, who was acquainted with my earlier, but not with my recent, papers when he wrote, admits (p. 112) that the existing systems of logic—the traditional as well as the modern symbolic—can be thus entirely constructed on a basis of pure statements; but he has preferred to follow the method of Boole as simplified by Venn, Schröder, Peirce and others. In this he was quite right. For one thing, the principle which underlies my method, however important, did not come within the scope and purpose of his work; and, for another, it did not appear (in my earlier papers) to lead to any essential difference in the symbolic processes. That this is no longer the case my recent papers in MIND and in the *Proceedings of the Mathematical Society* will show; but the new development is still further removed than the old from the allied algebras which it has been the great aim of Mr. Whitehead to unite into one general comprehensive system. This task, judging of the whole from my knowledge of a part, I consider him to have accomplished with rare ability.

His opening chapter, “On the Nature of a Calculus,” is very interesting, and may be understood by any one of ordinary education and intelligence. If the reader knows something of common algebra he will grasp the author’s meaning more easily; but, for much of this chapter, even this modicum of preliminary knowledge is not absolutely indispensable. When, however, we enter upon the second chapter, which treats of *Manifolds*, we find ourselves on very different territory. A reader previously unacquainted with the subject cannot read this straight through, as he would a novel or a paragraph in a newspaper; he will have to make

frequent halts, and sometimes very long halts, in order to reflect. This is not altogether the author's fault. The truth is that the subject of manifolds is extremely difficult to understand, and still more difficult to explain. The meaning of the word *manifold*, as defined by its inventor, Riemann, is so very general, not to say vague and attenuated, that it may be called the *ether* of mathematical conceptions. From some point of view or another almost anything may be regarded as a manifold and resolvable into constituents which are also manifolds. Mr. Whitehead might, I think, with advantage have restricted his discussion to the general characteristics of the manifolds which enter into his compared algebras, and he should have illustrated these more copiously with simple and concrete examples.

In the third chapter we have an explanation of the principles of "Universal Algebra". "Universal Algebra," says the author, "is the name applied to that calculus which symbolises general operations, defined later, which are called Addition and Multiplication". From this definition it is clear that the word *universal*, as Mr. Whitehead uses it, must be understood in a somewhat limited sense. We now learn more precisely the particular lines of investigation which the author intends to follow, and the order in which he takes the special algebras to which he limits his discussion. "The Algebra of Symbolic Logic," he says, "is the simplest possible species of its genus and has accordingly the simplest interpretation in the field of deductive logic. It is, however, always desirable while developing the symbolism of a calculus to reduce the interpretation to the utmost simplicity consistent with complete generality. Accordingly, in discussing the main theory of this algebra, the difficulties peculiar to Symbolic Logic will be avoided by adopting the equally general interpretation which considers merely the intersection or non-intersection of regions of space." Farther on, on the next page, he says: "This spatial interpretation, which also applies to the algebra of Symbolic Logic, will in some form or other apply to every special algebra, in so far as interpretation is possible. This fact is interesting and deserves investigation. The result of it is that a treatise on Universal Algebra is also to some extent a treatise on certain generalised ideas of space."

Now, if Mr. Whitehead, in the preceding quotations, only means that appeals to diagrams and to spatial problems are of great utility as particular illustrations of general theorems in Symbolic Logic, my opinion wholly coincides with his. But, if I understand him aright, he means much more than this. His words seem to imply that to every valid formula in Symbolic Logic, no matter how abstract the region of thought, and no matter what the elementary symbols may be defined as representing, there always corresponds an analogous formula (*symbolically identical*) of which the elementary symbols represent spatial magnitudes; so that any argument referring to the non-spatial region of

thought has its symbolic *double* (so to speak) in the spatial region, and *vice versa*. A similar assumption appears to be accepted by the whole Boolean school of logicians as a universal certainty on which the symbolist may always rely with absolute confidence. Yet the assumption, like the whole system of Inductive Logic as Mill understood it, rests upon a fallacy, and reliance upon its validity has led not only Boole, but (as I have recently shown elsewhere) some of the ablest living logicians into demonstrably false conclusions. They found that, *in all the numerous cases they had examined*, the formulae of the logic of Pure Statements had their exact analogues in the logic of Concrete Quantity, and they inferred, very naturally but quite erroneously, that this must also hold in the infinite number of cases which they had *not* examined. The explanation is this. The Boolean calculus, even when it deals with secondary propositions, is never a calculus of *Pure Statements*. Its elementary constituents, x, y, a, b , etc., as Boole is very careful to state, never represent statements directly; they always represent the *fractions of time* (referred to some understood arbitrary whole unit) during which the various statements in question are true; and it is quite clear from Boole's language that he considered this convention as a necessary and fundamental principle. The logicians above referred to have not all accepted Boole's exact views upon this point, but his quantitative conventions have, nevertheless, coloured their thoughts and *restricted the field of their experimental researches*. Within this field they invariably found symbolic coincidence of formulae combined with divergence of interpretations; and it never occurred to them that outside the Boolean boundary there was a far more extensive region of thought on which they had not yet experimented, and in which the law of symbolic coincidence could no longer be relied on.

A calculus of Pure Statements bears pretty much the same relation to the Boolean scheme and its more modern developments as ordinary algebra bears to geometry. Up to a certain point there is coincidence of formulae, and then separation. In ordinary mathematics some algebraic formulae, such as

$$a^3 - b^3 = (a - b)(a^2 + ab + b^2),$$

may, *within the limits of certain conventions as to units, etc.*, be interpreted in terms of real geometric squares and cubes; but this line of interpretation fails for formulae involving higher powers of their elementary constituents. For these a geometric interpretation may be still possible, but only on condition that we make a fresh start and *adopt wholly different conventions*; whereas the purely algebraic interpretation (for the higher as for the lower powers) remains clear, intelligible and homogeneous throughout. So with Symbolic Logic. In Pure Logic the symbol A^B , or any arbitrary equivalent, asserts that the statement A belongs to the class of statements denoted by B . In Applied Logic

also the symbol A^B may be used to assert that the concrete and material *thing* denoted by A belongs to the class of concrete and material *things* denoted by B. So far there is symbolic coincidence. But now take the symbol A^{BC} , which is short for $(A^B)^C$ and asserts that the statement A^B belongs to the class of statements denoted by C. Here, from the standpoint of Pure Logic, A is a statement, B is a statement, C is a statement, A^B is a statement, and A^{BC} is a statement, so that we have homogeneity throughout. But we cannot get this homogeneity in Applied Logic. In Applied Logic A and B may both denote concrete things or classes; but farther we cannot go. By virtue of our definitions, C cannot denote a concrete thing; neither can A^B nor A^{BC} . These, within the limits of our definitions, *must* denote statements, and *cannot possibly denote anything else*. Similarly for A^{BCD} and for statements of still higher degrees. Thus, as soon as we pass the limits of *primary* statements and get into statements of the secondary, tertiary, etc., degrees, we enter an abstract region of thought (including many important problems in probability) to which none of the Boolean systems can be applied. Any statement, no matter what its degree, can be spoken of as true or false, certain or uncertain, possible or impossible, probable or improbable, within more or less exact limits according to our data; but none of these epithets can be applied to any portion of space or time, or to any concrete subject whatever; nor can we find any concrete homogeneous substitutes, so far analogous to these abstractions as to be interpretable in the same formulae or symbolic operations.

Of course this criticism in no way affects the value of Mr. Whitehead's work, even if that work were restricted to that small part of it on which I may without presumption venture to express an opinion. On the contrary, he has, I think, done even more for exact science than he had contemplated when he embarked upon his arduous undertaking; he has traced out the line of analogy running through his compared group of algebras so distinctly that it enables one to see not only the very large class of problems to which these algebras can be applied, but also the limits of their application. This is very important, and its importance must be accepted as my excuse for drawing attention more to the *boundary* within which his allied algebras can effectively operate than to the undoubted value of their operations *within that boundary*.

Apart from these questions of general principle and of interpretation, on which, perhaps, no two logicians could be found in complete agreement, I regard Mr. Whitehead's five chapters on Symbolic Logic as an admirable epitome (with some original improvements) of the results and processes discovered by previous writers; the whole subject being presented as it appeared to him from his standpoint of *comparative algebra*. In the matter of notation he adopts Boole's horizontal bar, and in very much the

same sense, but with some modification in complex cases. Thus he writes

$$\bar{(x + y)} = \bar{x}\bar{y}$$

where I should write

$$(x + y)' = x'y'$$

One objection to the horizontal bar is that both in actual operations and on the printed page separate bars are apt to run into each other, so that they look like one continuous bar. For example, $\bar{x}\bar{y}$ cannot always be easily distinguished from xy , which has quite another meaning. Mr. Whitehead also adopts Boole's symbol o to denote what he calls the "null element"; but he substitutes the symbol i for Boole's symbol 1 to denote the universe. These symbols correspond respectively to my symbols γ and ϵ , which denote *impossibility* and *certainty*. Mr. Whitehead employs no symbol (nor, so far as I know, does any other writer) corresponding to my probability symbol θ , which I use to denote a statement that is *possible* but *uncertain*. To express "subsumptions," or "regions incident in other regions," he borrows Schröder's symbols, \Leftarrow and \Rightarrow , which correspond to my symbols of implication, : and !; the first or the second symbol being used in each case, according to the *direction* of incidence or implication. For myself, I must own to a rooted prejudice against absolutely new and strange-looking symbols. When there is no risk of ambiguity, I think it much preferable to employ an old symbol (or combination of symbols) in a new sense. Moreover, this question of the choice of symbols involves an important principle. The time has come, I believe, for taking a totally new departure. I see no reason why we should treat our symbols of relation, +, ; =, indices, fractional forms, etc., with more respect than we do the ordinary letters of the alphabet. Just as any letter x may denote one thing in one problem and quite another thing in another problem, so any symbol of relation, or any combination of symbols, such as $x + y$, x'' , etc., may be defined as meaning one thing in one kind of investigation, and defined afresh as meaning quite another thing in another and totally different kind of investigation. If proper care be taken in our choice of symbols the context (as in ordinary speech) will prevent all risk of ambiguity.

Mr. Whitehead's treatment of the "Existential Import of Propositions" is interesting and original; but, unfortunately, the symbolic process which he here employs is not of a kind that can, with justice to the author, be described briefly. I was at first under the impression that his notation and mine in dealing with this subject were mutually convertible; but, on closer examination, I find that they move along different paths and have but few points in common.

HUGH MACCOLL.

Die Philosophie der Geschichte als Sociologie. Von Dr. PAUL BARTH. Erster Theil: Einleitung und Kritische Uebersicht. Leipzig: O. R. Reisland, 1897. Pp. xvi., 396.

DR. BARTH has done himself some injustice by publishing this first volume of his work before the second was ready. The elaborate survey of sociological systems will certainly embarrass the reader who does not bear in mind that it is to serve as a groundwork of what is to come, and, even then, he will scarcely avoid the reflexion that, had the author had the end in sight, a sense of symmetry and proportion would have forced him to lighten the present contribution of at least half its bulk. The hope is expressed in the Preface that the book may not be too historical for the philosophers, nor too philosophical for the historians. Judging it from the point of view of the former, the historians seem to have come off decidedly the best. The historical matter, moreover, is given too much in the form of notebook analyses, and needed much throwing into shape before being presented to the public.

The Introduction (filling the first thirteen pages) discusses the meanings to be assigned to the terms "history" and "philosophy of history," and then the relation of Sociology to the latter. Dr. Barth thinks a complete Sociology would coincide absolutely with a Philosophy of History, and would differ in nothing except the name. Wundt attempted in his *Logik* to establish a demarcation thus. Sociology was concerned with the conditions (*Zustände*) of human society, in particular epochs and countries; history with the events (*Vorgänge*) through which these conditions have arisen. It was true that society is an historical product, never remaining stationary in the stream of development, but for all that one was compelled, for purposes of historical investigation, to regard certain definite social conditions, lying between two rigidly determined time limits, as relatively constant. As against this view Dr. Barth urges that, admitting the relative stability of many historical conditions, they are nevertheless only explicable when account be taken of the way in which they have come to be, and that the distinction, therefore, between social statics and social dynamics is untenable. Granting this objection, however, it is valid only against a separation, like that of Wundt's, of sociology from the *science of history*. A *philosophy* of history, endeavouring to do for *all* history what the scientific historian does only for a particular period, *viz.*, discover the meaning or underlying principle of the whole development, may or may not be possible; in either case it is unaffected by Dr. Barth's argument. And if he reply, as doubtless he would, that there are many such principles, the question would still remain whether then they simply stand side by side as a multiplicity, or do not rather constitute a hierarchy, leading up to one, which is all-inclusive and supreme.

This, however, is almost the only instance in which the author comes into conflict with Wundt, and the book may not unfairly be regarded as the attempt of a disciple to work out the principles of the Wundtian Psychology on the field of human life generally. The "Critical Survey" is divided into three sections. The first deals with the sociological systems; the second with such "philosophies of history" (using the term in the older sense) as retain a significance for present-day thinking, but which, in the author's view, manifest their one-sidedness; the third with the question whether human society really lends itself to scientific treatment.

The first section opens with an analysis of the writings of St. Simon, to whom the origin of sociology as a science is credited. This is followed by an account of the first system of sociology, that of Auguste Comte, and the succeeding chapters deal with the three diverging currents of sociological doctrine that have sprung from the Comtian system, *viz.*, (1) that based on the method of classification (Littré, De Roberty, De Greef, Lacombe); (2) the biological system (Spencer, Lilienfeld, Schäffle, Fouillée, Worms); and (3) the dualistic system (Ward, Mackenzie, Haurion, Giddings). Of these, the systems of Comte and Spencer receive the fullest treatment, and the critical remarks of the author are often penetrating and suggestive.

In reference to Comte, for example, he is particularly successful in showing how far from being fulfilled is the claim of having presented a purely objective account of historical development. Viewing the history of humanity as an immanent teleological process, subordinate to the attainment of one end, *viz.*, the age of Positivism, Comte was logically bound to regard the various stages of the process as means to this end, and the means themselves as a series of causally (presumably in Wundt's sense of "psychical causality") connected factors. As instance of failure to satisfy this requirement, the unsatisfactory position of the metaphysical, as the intermediary link between the theological and the positivistic, stage, in the celebrated "Law," is cited. "The way in which Metaphysics arises out of Monotheism ought," says the author, "to have been deduced as a necessary consequence from the nature of the human intellect. But no such deduction is given. It is simply contended that intermediary links are necessary, that transitions do not take place directly, but why exactly metaphysics should form the link between theology and positivism is left wholly unexplained."

The chapter on Spencer, for the most part a reproduction of a review article, published in 1893, contains some interesting criticism upon the carrying out of the biological analogy. The author contends that Spencer has failed to note both many essential likenesses and many essential unlikenesses, of the social and animal organisms. He has failed to observe that the unit of society regarded from the point of view of growth differs from the unit of society regarded from the point of view of structure. The former

can at no time be other than the family, never the individual, which Spencer, following Maine, assumes to be the unit of *modern* society. The unit of a social structure, on the other hand, is the individual, for only as such, and not as member of a family, does a man enter into the various social organs, such as the army or that of industrial workers. Again, by treating society purely as a "Naturwesen," Spencer is oblivious of the vast influence of what Wundt calls the "Wachstum der geistigen Energie" in social development. The essential feature of such development, the emancipation of man from nature and the gradual formation of a spiritual organism, advancing step by step with the growth of apperceptive, as distinguished from associative, thinking, is consequently ignored. Of interest is also the argument of Dr. Barth, as against Spencer and Fouillée, in favour of the conception of the "self-consciousness" or "ego" of society.

Among the writers dealt with in the fifth chapter is J. S. MacKenzie, of whose *Introduction to Social Philosophy* a fairly accurate account is given. This author will, however, scarcely recognise himself as one of the advocates of a "dualistic sociology"! Dr. Barth has evidently failed to realise that in England, at least, Hegelian modes of thought are still "lebendig".

The second section of part i., under the heading "Einseitige Geschichtsauffassungen," consists of seven chapters. The first, dealing with the individualistic point of view, discusses the "great man" theory, in connexion with the writings of Taine, Bourdeau, Odin and Lamprecht, not without adding some useful reflexions of its own. Especially happy is the author in showing, as against Bourdeau, that a mere summation of intelligences does not imply an enhancement of intelligence, that the difference between genius and mediocrity is qualitative and not quantitative—a truth, by the way, which would bear considerable expansion in view of some recent metaphysical theorising. The longest, and the most valuable, chapter in this section is, however, the last, devoted to the interpretation of history from the point of view of Economics, as represented by Durkheim (for whom the animating principle of historical development is the division of labour), Patten, Karl Marx, Engels and the followers of Marx. Dr. Barth's criticisms here are judicious and convincing. He undoubtedly makes good the position that not only is the method of production not the sole determining conditions of social movements, but from the first other factors have been instrumental (in primitive man, e.g., animistic ideas), and the higher the stage of development reached and the richer the supply of ideal elements present, the less decisive in significance for the tendencies of a people and of a period does the existing economical situation become. The preceding chapter, which, under the title of "ideological," is concerned mainly with the views of Hegel, is far too slight and fragmentary. Whilst admitting a logical necessity working in history and the soundness of discriminating between epochs of construction and

of dissolution, Dr. Barth condemns the Hegelian theory for not attempting any psychological explanation of the origin, and still less of the decay, of the ideas, that have been operative in the evolution of society. The force of this objection depends, however, upon the assumption that the historical process is primarily a psychological one—an assumption contrary to the spirit of Hegel's philosophy, and in no way confirmed by Dr. Barth's own treatment of social development.

In a third section, the author has to face the question, raised by Dilthey, whether a scientific treatment of history is after all possible, and answers it by emphasising the distinction between the conceptions and the methods of physical science, denying the applicability of the former but insisting upon that of the latter to mental phenomena.

The concluding pages give a brief sketch of the author's own view of the process of historical development, a view which he promises further to substantiate in a second volume. In regard to primitive societies, he follows closely on the lines of M'Lennan and Morgan, making use also of Tylor's researches into the origin and influence of animistic beliefs. When under the protection of the *gens*, the monogamous family arises, and the ancient communism is, on that account, broken up, society is saved from the dangers of family egoism by the lawgiver, who creates artificial means (abstract laws, deriving authority from being ascribed to the commonly recognised Nature-gods, which are thus endowed with moral attributes) of restoring the threatened unity. The state arises, and with it the sundering of the artificially formed society into classes (*Stände*) with rights and duties of their own. The author traces the decay of the "ständische Gesellschaft" in ancient Greece and Rome, the "Auflösung" of that in the middle ages through the system of absolutism, its reappearance in the sixteenth century, and the subsequent supremacy of the *laissez faire* principle. The present age he regards as a period of decay. Concentrating its strength upon inductive and analytical pursuits, it has lost the capacity, and has ceased to feel the need, of creating, and that through its want of faith in the power of spiritual personality, without which true Art is impossible. Not until a new sense of the infinite worth of moral and æsthetic ideals is awakened in all classes of the community will the triviality of modern life be overcome.

We shall look forward with interest to the completion of a work, for which the foundations have been so laboriously laid.

G. DAWES HICKS.

VI.—NEW BOOKS.

Studies of Good and Evil. A Series of Essays upon Problems of Philosophy and of Life. By JOSIAH ROYCE, Professor of the History of Philosophy in Harvard University. New York : D. Appleton & Co., 1898. Pp. xv., 384.

"I HAVE called these papers *Studies of Good and Evil*. The title is in its nature wide. It commits the essays contained in this volume merely to one character. They are all, directly or indirectly, contributions to the comprehension of the ethical aspects of the universe. The papers are of very various relations to technical philosophical issues. Four of them are essays in literary and philosophical criticism. One is directly concerned with the effect of the 'Knowledge of Good and Evil' upon the character of the individual man. One is a contribution to the metaphysical 'Problem of Evil' in its most general sense. Five, while dealing with metaphysical and psychological problems connected with the nature and relationships of our human type of consciousness, are somewhat more indirect contributions to the ethical interpretation of our place in the universe. One is an historical study of a concrete conflict between good and evil tendencies in early California life" (Introduction, p. v.).

The first Essay, entitled "The Problem of Job," deals with the existence of evil in the world in relation to the Divine Being. Prof. Royce's solution of this problem is by him identified with the solution given to Job himself. The answer to Job is : "When you suffer, your sufferings are God's sufferings, not his external work, not his external penalty, not the fruit of his neglect, but identically his own personal woe. . . . The true question then is: Why does God suffer? The sole possible, necessary and sufficient answer is: Because without suffering, without ill, without woe, evil, tragedy, God's life could not be perfected" (p. 14). All moral development involves the sacrifice of a lower to a higher interest, and with the necessity for this sacrifice suffering and evil are essentially connected. The same thesis is developed from the purely human point of view in the fourth Essay, on "The Knowledge of Good and Evil".

The second Essay, on "The Case of John Bunyan," is a most interesting piece of psychological analysis, executed with masterly ability and sympathetic insight. The third, "Tennyson and Pessimism," treats of the contrast between Tennyson's earlier and later *Locksley Hall*. Prof. Royce points out that the optimism of the first poem is the sort of day-dreaming which leads to disillusion and melancholy. In the later poem, Tennyson has become alive to the reality of things, and to the necessary conditions and limitations imposed by this reality. His later mood is relatively the saner and truer and, in a sense, the more optimistic, because it forms a transition to an optimism which will stand wear and tear. In the fifth Essay, the ethical despair of Huxley in face of the dominance of non-ethical natural laws is shown to be founded, not in the

nature of things, but in an opposition between two subjective points of view, the naturalistic and the ethical. In the sixth Essay, "The Implications of Self-Consciousness," Prof. Royce takes up the old Cartesian argument, and tries to show, successfully, as we think, that the limitations of our finite self-consciousness imply an all-embracing consciousness, which in some sense is all that we aspire after. Perhaps this argument has never before been developed with so much force and lucidity.

The following Essay treats of "Anomalies of Self-Consciousness". It is well known that perversions of the concept of Self are produced by disturbing organic changes. Prof. Royce most ingeniously suggests that the strange organic sensations have this effect because they are characteristic of certain emotions involving specific attitudes towards the social environment.

The eighth Essay, on "Consciousness and Nature," is of special importance. It treats of the nature of our consciousness of the external world. According to Prof. Royce, those experiences have the stamp of external reality, which are an intersubjective possession. "What you can experience as well as I, is as such a physical fact. . . . If ten stones lie on the highway, and you and I count them, common-sense supposes that though your counting of ten is not my counting of ten, though your perception of the stones is not mine, though your inner life is in no fashion, here noteworthy, identical with mine, still the real stones that I count are identically the same as the real stones that you count." Prof. Royce argues that this common-sense notion of nature is not illusory. We cannot maintain that in truth each human being is aware of a separate fact presented only to himself, though it may resemble the objects severally presented to others. Such an assumption would destroy the basis of social consciousness; for it would imply that when many persons suppose themselves to be thinking about the same person each of them is thinking about a different person. This, according to Prof. Royce, is a *reductio ad absurdum*. This discussion of the nature of external reality is valuable; but in our opinion it does not go far enough back. The germ of the distinction between Self and Not-Self lies in the perceptual consciousness, and precedes the stage of ideal construction and inter-communication. The external reality of the bird to the cat which hunts it does not consist in the bird being a common possession of the social consciousness of cats or other beings.

The book concludes with four Essays, on "Originality and Consciousness," "Meister Eckhart," "An Episode of early California Life," and "Jean Marie Guyau". These are very interesting, but not of the same far-reaching philosophical importance as those which precede them.

In conclusion, we may say that *Studies of Good and Evil* is a book which imperatively demands to be read, and that reading it is a keen pleasure. It is to be commended not only to philosophers by profession, but to all who are interested in the ultimate problems of life.

EDITOR (G. F. S.).

The Evolution of the Idea of God: an Inquiry into the Origins of Religion. By GRANT ALLEN. New York: H. Holt & Co., 1897. Pp. ix, 447.

The Making of Religion. By ANDREW LANG. London, New York and Bombay: Longmans, Green & Co., 1898. Pp. v, 380.

Mr. Allen's work deals with three questions of origin: with the origin of polytheism, of monotheism and of Christianity. Accepting and developing Herbert Spencer's ghost-theory, the author maintains that

"corpse worship is the protoplasm of religion, while folk-lore is the protoplasm of mythology". The worship of the dead man is thus raised to a supreme and unique place in the god-making process. The book is flowingly and interestingly written. The technical journals have pronounced the hypothesis to be one-sided, and the argumentation to be special pleading. Nevertheless, it is always worth while in science to work a working hypothesis to its bitter end; and we hope that Mr. Allen will not be daunted in his intention of publishing further volumes which shall treat of the evolution of religion in greater detail.

While Mr. Allen seeks to rehabilitate Euhemerism, Mr. Lang undertakes the same office for the degeneration theory. His theory is that primitive man worshipped single supreme being, who was later obscured by the rise of ancestor worship and the ghost gods. The savage may have 'blundered' into a belief in God and the Soul, by observation of those supernormal phenomena which are still amongst us, under investigation by the Society for Psychical Research. Unfortunately, the faith of the 'scientific' reader in the exhaustiveness of Mr. Lang's quotations is shaken by his omission of references to the work on telepathy published recently in the *Philosophische Studien*, and to that on crystal-gazing and 'material' coincidences which has appeared in the *Psychological Review*.

An Introduction to the History of Religion. By FRANK BYRON JEVONS, M.A., Litt.D., Classical Tutor in the University of Durham. London: Methuen & Co., 1896. Pp. 443. Price 10s. 6d.

Perhaps the most distinctive feature of this work is the emphasis which it lays on totemism. The first deities, according to Mr. Jevons, are totem deities; and the ideas and practices connected with totem-worship colour and determine the whole evolution of religion. In particular, the idea of communion between the god and its worshippers is initially a totemistic idea. Hence springs the sacramental view of sacrifice as establishing union and communion between divine and human beings. The revival of religion connected with the Eleusinian and similar mysteries is really a revival of the totemistic point of view.

Another marked feature of the work is the sharp distinction drawn between magic and religion, even in primitive stages of human development. Religion is the attitude of man towards powers which he regards as uncontrollable by human beings. Magic, on the other hand, is a mode of procedure by which he thinks he can direct and command natural forces. The distinction is no doubt justified in principle; but, as a matter of fact, we often find the magical and the religious points of view inextricably blended, and this Mr. Jevons fails to recognise.

The author's treatment of taboo is very interesting. He finds in it the origin of the conception of property.

On the whole, Mr. Jevons has produced a good and useful book, and in many points he is original and suggestive. The prominence which he gives to totemism is one-sided; but he has certainly succeeded in bringing out very lucidly its peculiar importance in the development of religion.

Ignorance. A Study of the Causes and Effects of Popular Thought. By MARCUS R. P. DORMAN, M.A., M.B. Cantab. London: Kegan Paul, Trench, Trübner & Co., Ltd., 1898. Pp. xx., 328.

Full of interesting matter. The work is divided into three books. The first treats of "Collective Ignorance" and especially of "emotional waves" and "democratic delusions". In book ii. the chief causes of

ignorance are investigated. The psychological causes are grouped under the heads "Mental Grooves," "Misapplied Emotional Forces," and "Deficient Intellectual Powers". Under the first head, Mr. Dorman is particularly hard upon metaphysicians. But here the metaphysician will discern signs of ignorance in Mr. Dorman himself. It may be mentioned that he groups Huxley with Hume and Kant as a leading representative of metaphysical thought. Book iii. deals with some of the effects of ignorance, such as "The Art of the Uncultured," the attitude of the manual worker to the capitalist, "The Mind of Woman". Book iv. contains educational suggestions "founded on the desirability of allowing every one, as far as possible, an opportunity of becoming acquainted with the researches of the leading thinkers, and to show the great necessity for independent thought. The main point is, however, to ensure an equable development of all the physical and psychological functions in every direction" (Preface, p. viii). Mr. Dorman is from the nature of the case dogmatic. From the nature of the case he must pose as omniscient. Specialists, judging each in his own department, are likely to find this omniscience somewhat superficial. But human omniscience cannot be otherwise than superficial except in the case of a Leibnitz or Helmholtz. Mr. Dorman's book was worth writing.

The Origin and Growth of the Moral Instinct. By ALEXANDER SUTHERLAND, M.A. London: Longmans, Green & Co., 1898. In two volumes. Pp. xiii., 461; vi., 336. Price 28s.

This is a well-written book, and it is evidently the outcome of much patient industry. The author has accumulated a vast mass of material bearing on the development of what he calls "Sympathy" in animals and man. There is much that is instructive and interesting in his work; but taken as a whole it is a failure. Mr. Sutherland professes to trace "with unbroken continuity" the development of our "moral instincts" from the lower stages of animal life "through lowliest savage [*sic*] to the noblest of men". It cannot be said that his success is at all proportioned to his industry. Indeed, he seems to overlook the most elementary conditions of the problem which he seeks to solve. Morality is for him essentially identified with what he calls "Sympathy," and this seems to include all instinctive impulses which directly benefit society, animal or human. He fails to see that morality and the development of morality is bound up with personality, with the unification of conative tendencies in an organised system, and that this again is essentially connected with the growth of conceptual consciousness. It is his blindness on this point which leads him to think he has traced with unbroken continuity the unfolding of the moral consciousness from its primitive beginnings in the lower forms of animal life up to the noblest of men. The truth is, that he has scarcely touched the development of morality in the proper sense at all.

The Wonderful Century. By A. R. WALLACE. London: Swan Sonnenschein & Co.; New York: Dodd, Mead & Co., 1898. Pp. x., 400.

This book falls into two parts: a shorter, dealing with the 'successes,' and a longer, dealing with the 'failures' of the nineteenth century. The former, written in a chatty, reminiscent style, is as successful as the century itself; in the latter Dr. Wallace mounts his various hobby-horses, and intermixes much exaggeration and extravagance with his scientific good sense and solidity of judgment.

We are concerned here with only two chapters, those on the neglect of phrenology and on the opposition to hypnotism and psychical research. The first presents the case for phrenology in a strangely *ex parte* way. No one who knows the literature of phrenology will be able to accept Dr. Wallace's account of it. As for the radical error of phrenology, it is of course the psychological error of regarding mind as a bundle of faculties, rather than as a stream of processes or system of functions. That Huxley should not have seen this (p. 182) is not surprising to those who have read his little book on *Hume*, and acquainted themselves with the psychology that underlies it. Nor is Dr. Wallace happier in his championship of psychical research,—to say nothing of the fact that, with such protagonists as Sir W. Crookes upon the scientific, and Mr. Andrew Lang upon the literary side, the 'problems' of psychical research are rather likely to crowd out those of psychology proper than to be themselves ousted from the field.

The Study of the Child: A Brief Treatise on the Psychology of the Child, with Suggestions for Teachers, Students and Parents. By A. R. TAYLOR. International Education Series, No. 43. New York: D. Appleton & Co., 1898. Pp. xlivi, 215. Price \$1.25.

The American book market is just now flooded with works, of all degrees of merit, upon child study and educational psychology. Some, like Dr. Oppenheim's *Development of the Child*, possess a permanent value; many have the stamp of the ephemeral clearly upon them. The present work is somewhat difficult to estimate. The editor (Dr. W. T. Harris) calls it "sound and wholesome"; and so, for the most part, it is on its practical side. The psychology is scrappy and the biology hazardous; for proof of the former statement one has only to refer to the definitions of will, feeling and attention (pp. 106 ff., 114, 124), for proof of the latter to the discussion of heredity (pp. 182, ff.). But the author's enthusiasm, modesty and constant reliance upon his own teaching experience may go far to recommend him to the teachers and parents to whom he appeals. The student will pass on to writers of a more severe type.

The book begins with chapters on the senses, apperception (consciousness and attention), symbolism, muscular control, feeling and will. Then follow discussions of the intellectual functions, habit and character, instincts and plays, manners and morals, normal and abnormal development, stages of growth, fatigue, etc. An Appendix gives a selected list of reference books and papers.

The Psychology of Peoples: its Influence on their Evolution. By G. LE BON. London and New York: Macmillan & Co., 1898. Pp. xx, 236. \$1.50.

M. Le Bon is already favourably known to English readers by his recently translated *Psychology of the Crowd*. In the present volume he has gathered together, in brief summary, the conclusions of the various works in which he has treated of the history of civilisations. The style is clear and forcible, tending, indeed, at times to an almost brutal frankness; and the book grows in interest as one reads. The contrast drawn between the Latin and the Anglo-Saxon races, the pictures of North and South America and the discussions of Japan and India, are of especial interest.

The author's central thesis is that chance, environment and institutions play but secondary parts in the history of a people. Character (race) is the important thing. This character—a people's morality and

conduct—is determined mainly by its ancestry. After character, ideas, and particularly religious ideas, are the most important factors in the evolution of a civilisation. The possession of a small number of highly developed minds is what differentiates a superior from an inferior race.

Human Immortality: Two Supposed Objections to the Doctrine. By W. JAMES. Boston and New York: Houghton, Mifflin & Co., 1898. Pp. ii., 70. \$1.00.

This, the Ingersoll lecture for 1898, deals with the two questions: How can we believe in a life hereafter if our inner life is a function of our cerebral convolutions? and: How can we accept the "incredible and intolerable number of things which, with our modern imagination, we must believe to be immortal, if immortality be true"? As for the former, the brain either produces consciousness or it merely combines or transmits it. The theory of combination (mind dust) is not here touched on: the theory of transmission is defended as against that of production. As for the latter, "the tiresomeness of an over-peopled heaven is a purely subjective and illusory notion, a sign of human incapacity, a remnant of the old narrow-hearted, aristocratic creed". The lecture is written with Prof. James' accustomed vigour and brilliancy. The book ends with twenty-four pages of notes and references.

Thomas Reid. By A. CAMPBELL FRASER (Famous Scots Series). Edinburgh and London: Oliphant, Anderson & Ferrier, 1898. Pp. 160. Price 1s. 6d.

Not long ago it was very much the fashion to speak disparagingly of Reid. Now the tide has turned. There is good reason for this change of opinion. Reid in his life-long battle against the "doctrine of ideas" was by no means beating the air. It is essentially necessary to emphasise that our knowledge is a knowledge of objects and not of the states of consciousness which cognise them. By this simple contention, Reid struck the deathblow of a crowd of fallacies. It is not, however, this part of Reid's work on which Prof. Fraser appears inclined to lay most stress. What appeals to him is rather the doctrine of "common sense". The appeal to common sense is, as Prof. Fraser points out, a "final appeal to the divine in man, latent in each individual man, in and through whom the universe is gradually interpreted as a revelation of perfect reason or perfect goodness" (p. 158). No doubt this appeal has a substantial justification, though it cannot be maintained in the shape which Reid gave to it.

It seems scarcely necessary to say that the life of Reid is admirably told by Prof. Fraser. We wish that he had quoted the letter to Dr. Gregory on the Origin of Language, a wonderful anticipation of the results of modern research.

The Play of Animals. By K. GROOS. Translated by E. L. BALDWIN, with Preface and Appendix by J. M. BALDWIN. New York: D. Appleton & Co., 1898. Pp. xxvi., 341.

We are glad to welcome Prof. Groos' already famous work in an English dress. The text of the present edition is practically that of the German original, though there are few revisions and omissions. Prof. Baldwin supplies a Preface, which is for the most part a reprint of his review in *Science*, 26th February, 1897, a number of footnote references, and an Appendix on Organic Selection, reprinted from *Science and Nature*, April, 1897.

Miss Baldwin's translation is accurate and fairly readable; we have noticed slips only on pp. 24, 106, 108 ("tumbled about some"!). A humorous printer makes the nurse "scald" the children under her care; and modernised spelling tells us that the dog loves the "curb" (kerb). It is regrettable that many works which are familiar in English translations should still be cited in German form. The signs that call attention to footnotes are ingeniously ugly, and very disturbing to the reader.

The Story of the Mind. By J. M. BALDWIN. Library of Useful Stories. New York: D. Appleton & Co., 1898. 16 mo. Pp. vii., 236. Price 40 cents.

In this little volume Prof. Baldwin has gathered together his views of psychology at large, quoting freely from his previous works, "relying frankly on his own experience, and in debatable matters giving his own opinions". The result is a compendious Handbook to Baldwin, very useful in view of the magnitude of the author's recent output and the wide range of periodicals over which his essays are scattered.

The ten chapters deal with the Science of the Mind, What our Minds have in Common (introspective psychology), the Mind of the Animal and of the Child, Body and Mind, Experiment, Suggestion and Hypnotism, the Training of the Mind, the Individual Mind and Society, the Genius and his Environment. An appendix gives a selected list of works in English.

The Unconscious Mind. By ALFRED T. SCHOFIELD, M.D., M.R.C.S. London: Hodder & Stoughton, 1898. Pp. xv., 436. Price 7s. 6d.

The author truly remarks in his Introduction that his book "well-nigh appears to be little more than a collection of extracts". It cannot be said that he has either added to our knowledge of psychology, or presented what is already known in a specially luminous or forcible manner. But doubtless the work will find a public which will derive instruction from it. It is sufficiently readable.

Psychology for Teachers. By C. L. MORGAN. New York: Chas. Scribner's Sons, 1898. Pp. xl., 240. \$1.00.

This is a clearly written little book, in which the outlines of a psychology are filled out by practical educational suggestions. As Superintendent Jameson's Preface shows, it has already found favour with American teachers.

Of the psychology, as psychology, little good can be said. It is regrettable that Prof. Morgan, like the late Prof. Romanes, is content to spend his energies upon popularising the older psychology, with its hierarchy of logical abstractions and its neglect of actual mental processes. Familiarity with the books recently published by Jodl and Stout would have done away, e.g., with the old-time 'impressions of relation' and with many another relic of the English psychology of forty years ago.

Nirvana: A Story of Buddhist Philosophy. By P. CARUS. Tokio, Chicago and London: Open Court Publishing Co. Pp. 41. Price \$1.00.

To its other literary enterprises the Open Court Publishing Co. has added the publication of works on Eastern philosophy, printed on crepe paper and illustrated by Japanese artists. One of these, *Karma: a Story of Early*

Buddhism, has passed through several editions. The quaint combination of India, Japan and North America in it and in this volume was a happy thought on the part of the versatile editor of the *Monist*.

The *Nirvana* consists of a pictorial sketch of Buddhistic psychology. A curious note of modernity is struck in such sentences as these: "Your character, your thoughts, your volitions are your soul. You have not ideas, but you are ideas. . . . Consciousness originates as a product of conditions, and disappears when the conditions cease."

Port-Royal Education: Extracts, with an Introduction. By F. CADET. Translated, with Index, by A. D. JONES. New York: Charles Scribner's Sons, 1898. Pp. iv., 260. \$1.50.

M. Cadet's book consists of a historical and critical introduction of sixty-seven pages, and extracts from the principal Port-Royal writers—Saint Cyran, Arnauld, Lancelot, Nicole, De Saci, Guyot, Coustel, Fontaine, Jacqueline Pascal, etc. The translation is well done, and the work forms a valuable addition to English pedagogical literature. In a future edition the translator would do well to rewrite the historical part of the Introduction in somewhat greater detail.

A Mechanico-Physiological Theory of Organic Evolution. By C. von NAEGELI. Trans. by V. A. CLARK and F. A. WAUGH. Chicago: Open Court Pub. Co., 1898. Pp. 58. Price 15 cents.

A careful translation of the summary of Naegeli's *Abstammungslehre* (1884), which will do good service in calling the attention of English-speaking biologists to the whole work. An appendix of 9 pp. is taken up with Translator's notes.

Les Lois Sociales; Esquisse d'une Sociologie. Par G. TARDE. Paris: Félix Alcan, 1898. Pp. 167.

Études de Psychologie Sociale. Par G. TARDE, Membre de l'Institut International de Sociologie. Paris: V. Giard et E. Brière, 1898. Pp. 327.

The little volume entitled *Les Lois Sociales* contains the substance of lectures given by M. Tarde at the Collège Libre des Sciences Sociales in 1897. It is a convenient summary of the sociological doctrines expounded in his chief works (*Les Lois de l'Imitation*, *L'Opposition Universelle* and *La Logique Sociale*), and seeks not merely "to bring together the *disjecta membra* into one body of ideas," but to show the principles which unite them. The larger volume (which forms one of the International Sociological Series edited by M. René Worms) has somewhat miscellaneous contents. Most of the essays in it have already appeared in various periodicals. Though not arranged in a systematic order, they all help to illustrate the central ideas of the author as a sociologist. The last of the papers, dealing with the classification of crimes and legal offences, is addressed specially to the criminal lawyer, and appeals only to the criminal lawyer of other countries than France, if he has a scientific interest in comparative law. The papers "On Crime and Social Health" (a criticism of M. Durkheim's view that "crime is necessary, that it is bound up with the fundamental conditions of all social life, and is thus useful"), "On the Criminality of Different Professions," and "On Juvenile Crime," have a wider interest; but they

are special studies in sociology rather than philosophical discussions. The article entitled "Souvenirs de transports judiciaires" is a charming little "causerie," reminiscences of the author's experiences as a "juge d'instruction". The title might be paraphrased *Scotice* as "Recollections of a Procurator-fiscal's official journeys". M. Tarde complains pathetically that criminals have so often chosen such lovely spots for their crimes. Another essay deals, and seeks to deal scientifically, with "Graphology". M. Tarde suggests that we may practise the maxim "know thyself" by studying our own writing; and his "advice to those about to marry"—more necessary perhaps in France than in this country—is "Never ask the hand of a young person without having examined some specimens of her writing". There is also a brief, sympathetic notice of M. Henri Mazel's interesting but rather unscientific book, *La synergie sociale*, and a review of Prof. Gidding's *Principles of Sociology*. The other four essays are longer, and occupy nearly all the first half of the volume. They are entitled "La Sociologie" (an essay on the nature and methods of the science), "Les deux éléments de la Sociologie" (*i.e.*, the primary social *fact* and the primary social *unit*), "Le transformisme social" (an elaborate review of Prof. de Greef's work), and "L'idée de l'organisme sociale". These four essays go over much the same ground as *Les Lois Sociales*, and give perhaps a clearer, because less abstract, view of the author's theories.

Of the *Lois de l'Imitation* a very full and careful analysis was given by Mr. Thomas Whittaker in MIND for July, 1890 (O. S., vol. xv.), and a brief account of *La Logique Sociale* will be found in the number for January, 1895 (N. S., vol. iv.). Any detailed exposition of the volumes before us is therefore unnecessary, and a few points only will be noticed. M. Tarde regards sociology as "collective psychology"; Comte conceived it as a social physics; Mr. Spencer has treated it as a social biology; but the worst notion (*whose* the reader is left to guess) is that which makes it a social ideology (*Etudes*, p. 92). For the famous metaphor of the social organism M. Tarde has little toleration. He calls it "a notion unanimously discredited" (*ib.*, p. 121). If so, what need to criticise it so fully? But the criticisms are very good. It is pointed out that every individual is the member of several societies at once (*ib.*, pp. 122, 187); that a society may change its fundamental *credo*, which, if it were an organism, would mean changing its species (*ib.*, p. 221). It is noted that terms such as "colony," "parasitism," "division of labour," "organisation," were applied to society before they were transferred to plants or animals (*ib.*, p. 128). Society is, in fact, less obscure and difficult to understand than life (*ib.*, pp. 11, 99). Such criticisms are just and valuable; but does not M. Tarde go too far in denying almost any value to the biological categories of organism and evolution as applied to society?

The primary social fact M. Tarde holds to be "imitation"—which is the psychological form of the universal principle of "repetition". Sociologists have erred by looking at the general and abstract aspects of social phenomena, and neglecting the particular and individual. "Socially everything that is general was at first individual" (*ib.*, p. 32). All institutions, customs, etc., have originated as individual "inventions," and have spread from individual to individual. True; but does not M. Tarde, in his horror of biological sociology, fall back upon physical and even mathematical metaphors? Ideas and customs are thought of as "radiating" from a centre; they may be met by opposite ideas, radiating from other centres, which thus "interfere" with them. Out of this combination of "repetition" and "opposition" comes the "adaptation"

we find in society. The triple formula has almost a Hegelian look; but M. Tarde has given it a somewhat mechanical interpretation. He confesses, in fact (*ib.*, p. 288), that he distrusts "trinitarian minds," like those of Hegel and Comte: he prefers dualist and dichotomist minds like that of Mr. Spencer. And in spite of his primary triad, and in spite of occasional limiting statements, M. Tarde shows himself devoted to dichotomy. His logic generally brings us to an "either—or," and his psychology is of an extremely dichotomous kind (*cf.*, p. 264). The social medium (*le milieu*) has been used too readily by many sociologists, but M. Tarde seems sometimes inclined to neglect it all together (*ib.*, p. 79). "The general mind is a function and not a factor of individual minds" (*Lois Soc.*, p. 45). But, if we leave out the social factor, is not the individual mind also an abstraction? M. Tarde himself in dealing with handwriting admits that every one's writing is a social, as well as an individual, product. To explain the inventions of a Watt or a Stephenson we must surely consider the social medium as well as the brain of the inventor. Of course the social medium consists of other individuals; but, whereas the individual mind is very difficult to know, we can know a good deal about the general mind; and M. Tarde himself allows that there can be no "science" of individuals as such (*Lois Soc.*, p. 8). At the basis of his sociology M. Tarde recognises that there lies a metaphysical monadology. But his metaphysics seems too merely "pluralist" or atomist to be called Leibnizian (*cf. Lois Soc.*, pp. 20, 163; *Études*, p. 76).

Again while pointing out the enormous significance of imitation, and thus escaping the error of those who, like Mr. Kidd (who is referred to as a "profound sociologist" in *Études*, p. 282), use the biological conception of "struggle for life" as a clue to all social evolution, M. Tarde seems to go to the extreme of denying its real value to the conception of natural selection. He disposes of Weismann (the name is inaccurately printed on pp. 118 and 277) too easily when he supposes his arguments against use-inheritance to be refuted by cases of "inherited" handwriting. Even if imitation be certainly excluded, a resemblance between the writing of parent and child may be due to both being of the same stock, and not to acquired characteristics.

M. Tarde's writing is always interesting and suggestive; and he has many happy illustrations, which show that he has a clear eye for the concrete—a great merit in psychologist or sociologist.

D. G. RITCHIE.

L'Art et le réel. Essai de métaphysique fondée sur l'esthétique. Par JEAN PÉRÈS. Paris: F. Alcan, 1898. Pp. xii., 208.

It is impossible to feel that this essay throws much light upon the nature either of art or of reality. Its obscurities alike of thought and of expression are such as to defy the best-intentioned reader. The author's drift appears to be as follows. He sets out with the doctrine that reality is not co-extensive with existence. Reality, in fact, is existence only in the fullest sense of the term, as opposed to ordinary finite and contingent existence. Of reality in this sense, man possesses a special sentiment or intuition which is blunted by the ordinary routine of life, but sharpened by notable crises of suffering and of action. Now art is one way, and the best of all the ways, whereby we apprehend reality. Thus true art is not concerned with producing ephemeral objects of pleasure. In the things of beauty which art creates are embodied man's highest characteristics as a person, as a moral agent, and as animated by a devotion to what is universal and superior to the category of time. From an analysis of the

phenomena of art we may get an answer to all the chief problems of metaphysic.

It is misleading of the author to intimate that his metaphysic is "founded on aesthetic". It is assumed without any foundation at all. We do not get anything about art till after a prefatory section full of violently mysterious assumptions about reality. "Le réel est donc mystérieux dans sa nature," argues the writer, and mystery or fogginess is the dominant impression of the book. Mr. Péres has undoubtedly a genuine interest in his subject, but he must study clearness of thought and expression. It is a mistake to write in sentences longer than those of the "judicious" Hooker (one in the introduction runs to 140 words), interspersed with aphorisms more cryptic than the fragments of Heraclitus.

Beiträge zur Akustik und Musikwissenschaft. Herausgegeben von Dr. CARL STUMPF. 1 Heft, C. Stumpf: Konsonanz und Dissonanz. Pp. vi., 108: Leipzig, Barth, 1898.

Prof. Stumpf tells us in the Preface to this brochure that its appearance is due to a decision which he has formed not to publish the two remaining volumes of the *Tonpsychologie* in this form, but in that of separate investigations. He has done, it would seem, with the psychological foundations, and will henceforth appeal to a more musical public.

The first number, written by himself, deals with the theory of Harmony and Discord. Although now and again it makes a pretty lengthy excursion into the physical side of acoustics, and into the more technical department of music, this first instalment is in the main psychological. It grows, indeed, as a kind of natural sequence out of the methodical inquiry into the analysis by the ear of tone masses which form the main problem of the second volume of the *Tonpsychologie*. Its theme may be described as the theory of fusion and analysis set forth in this volume applied to the explanation of the most fundamental contrast in modern, if not in all, music.

The essay begins with a critical examination of some of the more prominent traditional theories. Here the author deviates from the historical order, beginning with an examination of the latest of the commanding theories, *viz.*, that of Helmholtz, according to which dissonance arises from beats, and harmony means freedom from beats. The criticism of this hypothesis is particularly searching; the writer succeeds in showing that Helmholtz gives two definitions of harmony—the beat theory to fit the case of simultaneous tones or accords, and the theory of affinity, as determined by the coincidence of partial tones, to fit the case of the sequent tones of melody. He examines each of these. His argument is well prepared and forcible. It seems almost incredible that a great physicist—great alike in his mastery of the material and in his reasoning power—as Helmholtz undoubtedly was, could have gone so far wrong as he must have done if the facts are as Prof. Stumpf here describes them; he seeks to show that there is no discoverable relation between the amount of beat-effect of a pair of tones and its place among harmonious and dissonant combinations. As a piece of critical dialectic this sifting of the truth from the error in Helmholtz's explanation is quite up to the level of the writer's earlier performances. It is penetrating, unsparring in its thoroughness, finely discriminating, and immensely convincing.

After examining the 'unconscious arithmetic' theory of Leibniz, which places the value of harmony in a sub-conscious apprehension of the

numerical ratios of the tones, the writer opens up his own theory of fusion. He defines fusion of sense-elements as a tendency to unity which shows itself as resistance to analysis; that is to say, the recognition of a plurality of elements. The greater the degree of fusion the harder will it be to disengage the separate constituents. Hence the degree of certainty with which the ear can separate out the elements gives us the measure of the fusion; the one varying inversely as the other. Prof. Stumpf here seeks to show by help of experimental investigations of his own that the degree of fusion as thus ascertained coincides with the degree of harmonic affinity as recognised in music. The most striking example of this coincidence is that of the octave. Here there is the maximum number of errors in answering the question: Is this a single tone, or two tones? And it is well known that the octave has in music by far the closest degree of affinity. This is sufficiently shown in the familiar fact that we regard two tones forming the interval of an octave as in a sense the same tone.

The view that harmony is a running together of tones, discord a standing apart or aloof, is, as the writer reminds us, an old one, having the weight of authority on its side. He, however, can claim the credit of having given precision to the idea, and supported it by a methodical investigation of facts. It will at once be evident that his theory has this considerable advantage over Helmholtz's theory of beats, that it appears to assign a positive sensuous basis to the effect of harmony: for a tendency to fusion looks like a difference in the behaviour of the sensations. At the same time, as its advocate seems to recognise, it cannot be said to offer an explanation of the æsthetic value of consonance. Indeed, Prof. Stumpf seeks to keep out rigorously all consideration of the affective accompaniment. But he hardly justifies this rather violent course. The distinction between harmony and dissonance is essentially, in part, at least, a difference of feeling, even though it be true that the most obvious harmonies are not necessarily the most pleasing.

It may be safely said that the value of Prof. Stumpf's investigations will turn on the adequacy of his theory for the purpose of explaining the æsthetic impression of harmony. That the series of harmonic combinations answers in general to combinations difficult to analyse is an interesting generalisation; but what one wants to know is how this can be made to explain the fact that art seeks such combinations as agreeable, and avoids their opposites, save indeed for reasons lying outside themselves. If the writer had addressed himself to this æsthetic question he might have found it necessary to give even yet greater precision to his idea of fusion. He might have probed the question: What really happens in the consciousness of a person of ordinary musical sensibility when he listens, say, to the interval of a fifth? Does the 'sweetness' of such a combination—which sweetness seems to be the very soul of its harmony—depend on momentary extinctions of a sense of the duality of the tones? If not, how does the tendency to fusion work in differentiating this combination as 'sweet'? Unity in difference is commonly supposed to be the fundamental principle of all æsthetic combination; and it may turn out that musical harmony is an example of it somewhat analogous to certain chromatic effects, as when different adjacent colours are reduced each to a very small area, so that there is a 'partial blending'. My difficulty is to understand how such a tendency to fusion, or muffling, so to speak, of the distinctness of the elements, can be regarded as a *sensuous* effect at all. Does it not look more like the result of supervening intellectual processes, and more particularly of

an imaginative process which involves the feeling of mystery, and the impulse to chase what is fugitive and seems to be disappearing? But then the 'sweetness' of the harmony always appears to return on our hands as a sensuous phenomenon, *pur sang*. Here is the paradox which I trust Prof. Stumpf's fine analytical skill will yet help us to resolve.

J. S.

Kraepelin's Psychologische Arbeiten. Band ii., 2 u. 3 Hefte.

We have here, as indeed the title leads us to expect, a record of plenty of good work. The second *Heft* gives first an account of a method of measuring *Auffassungsfähigkeit* (facility of apprehension) for written characters and words, and then of some experiments on the psychological effects of trional, which happens to bear upon the same subject.

To measure *Auffassungsfähigkeit* a number of printed words of one or two syllables were pasted in spiral lines on drums, which were rotated so as to carry them at a uniform rate past an opening in a screen, whose width could be varied so as to alter the time of exposure; an arrangement which had the drawback that the word while in view was also in motion, and with long words it even happened that the whole word was not all in view at one time. An arrangement like that in the kinetoscope would apparently have been preferable. The words as read out were taken down by a shorthand writer and the conclusions deduced from the number and nature of the errors and omissions made. Six observers took part in the investigation, three of whom were normal individuals and three patients of Prof. Kraepelin's who suffered from more or less pronounced mental defects.

Perhaps the most interesting of the conclusions are those the author draws with respect to the individual differences among his six observers. One of them apprehended so rapidly that the various lengths of exposure of the words made no difference to him—he made practically no mistakes in any case; while the other observers exhibited varying degrees of facility, down to B. who with a short exposure did not read half the words correctly. And B. was a dipsomaniac. It is true that S. on the other hand, whose observations were not sensibly worse than those of two of the three normal observers, was also subject to attacks of alcoholism, but these Prof. Kraepelin attributes to an epileptic origin. But besides these Herr Cron and Prof. Kraepelin draw some further interesting inferences from a detailed examination of the figures, while at the same time they are careful to point out that it is absurd to expect these, or even very much more complicated psychometric experiments to enable us to form a complete estimate of a man's character or capabilities.

In the next article Herr Hænel gives an account of a series of experiments he made on himself to test the effects of the hypnotic drug trional; a drug which one does not often hear of in England but which is very similar to the more familiar sulphonal, only more rapid in its action. Herr Hænel took the drug on alternate days during each set of experiments, in such doses as would be ordinarily used to obtain sleep, and studied its effects by experiments on reaction, association, discrimination times, and by all those methods which Prof. Kraepelin has done so much to elaborate, including that described in the last article. The conclusion at which he arrived is that the drug works chiefly by reducing the *Auffassungsfähigkeit* for external impressions, and to a less extent by impeding the execution of co-ordinated movements. It does not seem to affect the inner mental processes such as association and imagination, with the curious effect that though the number of erroneous

reactions in taking discrimination times was actually diminished by taking the drug, the number of mistakes in reading was increased.

In Heft 3 we have an interesting paper on the periodic variations in working power, tested by Prof. Kraepelin's method of continuous addition; the period indicated being between two and two and a half seconds; which closely corresponds with that found by other observers as the period of variations of attention. Herr von Vors is inclined to seek for the explanation of this periodicity "*in centralen Vorgängen*". It is to be hoped, however, that this is not merely a counsel of despair, but that he himself will shortly have something more definite to tell us about it.

The remaining article concerns the alienist rather than the mere psychologist. It describes an apparatus for registering the pressure exerted and the time occupied in writing, and gives an account of some experiments made with it on healthy and on mentally diseased persons.

EDWARD T. DIXON.

Naturvölker und Kulturvölker. Ein Beitrag zur Socialpsychologie.

Von A. VIERKANDT. London: Williams & Norgate, 1898. Pp. xi., 497. Price 11s.

This is a book of real importance, and we are sorry that we cannot give it the extended notice which it deserves. Its interest is essentially psychological rather than sociological or anthropological. Its aim is to analyse and illustrate the contrast and affinity between the savage and the civilised mind, and the nature of the psychological development which leads from the one to the other. This transition, as the author shows, is essentially a transition from relatively disconnected impulse to organised and systematised mental activity. In the phraseology which he has adopted from Wundt, the contrast between the civilised and the savage mind is a contrast between apperception and association. He is also fond of stating the antithesis in another way. Activity in the savage, according to him, takes the form of play, as contrasted with the organised activity of civilisation. This seems only partially accurate. It is quite true that play is impulsive in its character; it arises out of the circumstances of the moment, and does not form an integral part of the organised system of life. One game is complete in itself, and, as such, is disconnected both with other games and with practical business. So far the analogy holds. But, on the other hand, it is very far from true that impulsive activity, as such, is necessarily playful activity. It may, and most frequently does, arise out of the immediate pressure of practical needs, such as hunger.

There can be no doubt concerning the soundness of Mr. Vierkandt's leading idea. It remains to add that he has worked it out in an admirable manner. His knowledge of anthropological and other data is very extensive and accurate, and he applies his erudition with great felicity, always subordinating it to the main psychological interest. There is scarcely a page of the work which does not contain something of interest and value. Compared with it, the defects of Mr. Sutherland's voluminous book on the *Moral Instinct* become very glaring.

Der Begriff des absolut Wertvollen als Grundbegriff der Moralphilosophie. Von Dr. FELIX KRUEGER. Leipzig: B. G. Teubner, 1898. Pp. 95.

This is a well-written essay containing much that is interesting to the English reader. Dr. Krueger's two main arguments are likely to meet with wide acceptance. He argues, firstly, that moral theory must be

founded on experience, or, as he puts it, on psychology ; and, secondly, that an appeal to experience will decide against hedonism. His first position leads him to criticise Kant, who was right in rejecting hedonism, but wrong in supposing that a psychological moral theory must necessarily be hedonistic. It was the latter mistake that led him to make the vain attempt of founding ethics on *a priori* basis.

In regard to his second argument Dr. Krueger lays it down that not only is it wrong to say "Pleasure is the supreme good"; it is wrong to ask what is the supreme good at all. We should not ask what is supremely good, but what is supremely valuable. Ethics, in fact, is the study of human values or appreciations, and its central problem is to determine what is absolutely and supremely valuable. In this connexion Dr. Krueger devotes a chapter to the psychology of value or appreciation, and criticises the doctrines of Meinong and von Ehrenfels, with whose hedonistic tendency he disagrees. He concludes that what is absolutely valuable is the faculty itself of appreciating or forming values, and that a man is morally good in proportion as he possesses and exercises this appreciative faculty. "He prayeth best who loveth best all things both great and small." Finally the author makes some pertinent illustrations of his own views and criticisms of other opinions. In particular he remarks that harmony among our various appreciations can never be the supreme good. Such an ideal would lead one to a mean-spirited and immoral quietism. In view of Mr. Shadworth Hodgson's exaltation of Harmony as the Moral Criterion these remarks of Dr. Krueger's are worth noting. The author concludes his essay with a review of Schuppe's moral theory which has many points of affinity to his own.

Rechte und Pflichten der Kritik. Philosophische Laien-Predigten für das Volk der Denker von C. E. RASIUS. Leipzig; London : Williams & Norgate, 1898. Pp. vi, 171.

The "Volk der Denker" to whom this book is addressed is the German nation, and the title "Laien-Predigten" was chosen because the author did not know himself "whether he belonged to the ranks of the laity or of the philosophers by profession". This doubt it is impossible for the reader to share. The author is obviously very much of a layman in philosophy.

The three sections of the work deal with "intellectual or logical criticism," "aesthetic criticism," and "ethical criticism". The first two are somewhat commonplace. "Intellectual and scientific criticism has the *right* to track out mistakes wherever they occur, and to lay bare remorselessly everything erroneous and self-contradictory. But criticism has also the *duty* of setting forth its investigations impartially, *i.e.*, without any regard for the likes or dislikes of oneself or others," and so on. The author's aesthetic criticism is not much more electrifying. But the ethical section contains some pretty considerable paradoxes, most especially in its practical recommendations. When the author tells us that truth is man's sole fundamental virtue, the proposition, though disputable, appears in a measure familiar. But we have never heard the abolition of capital punishment advocated on the ground that it is no punishment at all, death being the common lot sooner or later. Nor do we think, like the author, that a philosopher should be no less esteemed because he also happens to be a pickpocket. In addition to some other odd doctrines, of which the foregoing are only samples, the reader will find much else in the book to reward his curiosity—notes on freedom of the press, antisemitism, the Bible and other topics, all treated with force and conviction, as becomes the lay preacher.

Psychologie als Erfahrungswissenschaft. Von HANS CORNELIUS.
London : Williams & Norgate, 1897. Pp. xv., 445.

This is a valuable and important book, marked by lucidity and fineness of analysis. Critical notice, which owing to unavoidable circumstances has been delayed, will appear in the next number of MIND.

Saggio sulla Volontà. Per GIUSEPPE TARANTINO, libero docente di filosofia nella Università di Napoli. Napoli: F. di Gennaro e A. Morano. London : Williams & Norgate, 1897. Pp. 130.

This *Essay on the Will* is mainly concerned with the problem of Free Will, of which the solution is found in Determinism, reconciled with moral freedom by the intervention of the ego. The first part of the book, entitled "An Analytical Examination of the Will," is mainly a demonstration of the accordance of Aristotle's definition with modern theories. Signor Tarantino's view is, briefly, that every physical state tends to pass over into movement. Movement being a primitive fact, the function of will is essentially inhibitive. Will is the motor reaction of ideas and feelings. The motor force of an idea depends on the degree in which it has a sensible content or is connected with feeling, which is "the subjective consciousness of the objective state of the vital energy". Every affective state involves a cognitive element; but in the primitive organism this is overpowered by the effective element. The development of will proceeds side by side with the development of cognition.

The second part of the book deals with the metaphysical aspect of the question. Without the doctrine of determinism there could be no explanation of human action; but in accepting this fact we must recognise two factors in volition, motive and character, of which the latter is the more important. "An act of will may be considered as the result of the reaction of the individual character." Consciousness, like movement, is primordial; but in animals and young children the conflict of desires is decided on the principle of the parallelogram of forces, and consciousness is present, if at all, merely as a spectator. With intellectual development, will develops. Ideas are the motive force of action; and will depends, not on the number, but on the degree of organisation, of our ideas. To call the will *free* in the sense of *independent of motives* is absurd, since a causal nexus must underlie all volitional acts. *Freedom* consists in the development of character.

The practical aspects of the question have considerable interest for the author, and he makes some pertinent remarks on education and criminology.

Obietto e limiti della filosofia del diritto. Di S. FRAGAPANE. Roma : E. Loescher, 1897. Pt. i., pp. 156.

This, the first instalment of Mr. Fragapane's work on the philosophy of law, has a sub-title of its own : *I criteri d'una limitazione positiva della filosofia del diritto.* The second part will deal with the relations of the philosophy of law to the theory of knowledge and to ethics; the third will treat of the phenomenology of law.

The main argument of the present part is a somewhat angry protest against recent methods of dealing with the subject in Italy. The writer appears to plead for a treatment which shall be less infected with metaphysics and more in sympathy with sociology. But it cannot be said that the work leaves a very definite impression on the reader's mind.

Much of the criticism, the sarcastic part in particular, is remarkably obscure. The author attacks "that antiquated mode of thought which goes on incessantly frying up the ever-youthful dignity of Vico in the oil of Hegel, which has learnt to fuse Plato and Savigny into one amphibious and elusive conception of law, or is continually trying to inscribe its own philosophic hotch-potch on the sacred aureole of Thomism". Nor are the generalisations much more lucid. In summing up his views on the last page, the author remarks : "There results from the phenomena of law such a specific efficacy operating on the conditions of society as may give scope in the philosophy of law for a special normative doctrine, distinct from that which sociology might deduce from the general appreciation of social modifiability". Criticism and dicta of this pattern occupy most of the work. An immense number of authors are quoted, and a vast range of topics dealt with, law perhaps less than most. But the author in his forthcoming volumes must keep more closely to facts and indulge less luxuriantly in high abstract generalisation if he wishes to interest the ordinary student of legal philosophy.

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- J. Watson, *An Outline of Philosophy*, Second Edition, Glasgow, James Maclehose & Sons, 1898, pp. xxii., 489.
- A. Alexander, *Theories of the Will in the History of Philosophy*, New York, Charles Scribner's Sons, 1898, pp. 357.
- J. Seth, *The Scottish Contribution to Moral Philosophy*, Edinburgh and London, W. Blackwood & Sons, 1898, pp. 43. (6d.)
- J. E. Creighton, *An Introductory Logic*, New York, The Macmillan Company, 1898, pp. xiv., 392. (5s.)
- A. R. Dewar, *From Matter to Man*, London, Chapman & Hall, 1898, pp. viii., 289.
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- W. Wallace, *Lectures and Essays on Natural Theology and Ethics* (Edited by E. Caird), Oxford, Clarendon Press, 1898, pp. xl., 566. (12s. 6d.)
- H. R. Marshall, *Instinct and Reason*, New York, The Macmillan Company, London, Macmillan & Co., 1898, pp. xiii., 574. (12s. 6d.)
- E. Naville, *Le Libre Arbitre*, Deuxième Edition, revue et corrigée, Bale et Genève, Georg & Cie, Paris, Félix Alcan, 1898, pp. xiii., 311. (5 fr.)
- J. Roux, *Psychologie de L'Instinct sexuel*, Paris, Librairie J. B. Baillière et Fils, 1899; London, Williams & Norgate, pp. 96. (1 fr. 50.)
- D. Nys, *La Notion de Temps d'après les principes de Saint Thomas d'Aquin*, London, Williams & Norgate, 1898, pp. 232. (2 fr. 50.)
- P.-F. Thomas, *L'Éducation des Sentiments*, Paris, Félix Alcan, 1899, pp. 279. (5 fr.)

- M. l'Abbé C. Piat, *Destinée de l'homme*, Paris, Félix Alcan, 1898, pp. 244. (5 fr.)
- C. N. Starcke, *La Famille dans les différentes Sociétés*, Paris, V. Giard & E. Brière, 1899, pp. 276. (Broché, 5 fr. ; Relié, 7 fr.)
- M. Couailhac, *La Liberté et la conservation de l'énergie*, Paris, V. Lecoffre, 1897 ; London, Williams & Norgate, pp. 324.
- L. Ribert, *Essai d'une Philosophie Nouvelle suggérée par la Science*, Paris, Félix Alcan, 1898, pp. 562. (6 fr.)
- E. Gyel, *L'Être Subconscient*, Paris, Félix Alcan, 1899, pp. 191. (4 fr.)
- J. P. Durand (de Gros), *Aperçus de Taxinomie Générale*, 1899, pp. 265. (5 fr.)
- Le Dr. Maurice de Fleury, *L'âme du criminel*, Paris, Félix Alcan, 1898, pp. xvi., 192. (2 fr. 50.)
- F. Raymond et P. Janet, *Névroses et Idées fixes* (ii.), Paris, Félix Alcan, 1898, pp. x., 588. (14 fr.)
- C. v. Ehrenfels, *System der Werttheorie*, Band i., *Allgemeine Werttheorie, Psychologie des Begehrens*, 1897, pp. 277; Band ii., *Grundzüge einer Ethik*, London, Williams & Norgate, 1898, pp. 271.
- P. Mongré, *Das Chaos in kosmischer Auslese*, Leipzig, C. G. Naumann, 1898, pp. 213.
- B. Erdmann und R. Dodge, *Psychologische Untersuchungen über das Lesen*, Halle, M. Niemeyer, 1898, London, Williams & Norgate, pp. viii., 360. (12 M.)
- P. Natorp, *Socialpädagogik*, Stuttgart, Fr. Frommanns Verlag (E. Hauff), 1899, London, Williams & Norgate, pp. viii., 352. (6d.)

VII.—PHILOSOPHICAL PERIODICALS.

PHILOSOPHICAL REVIEW. Vol. vii., No. 4. **J. Watson.** ‘The Metaphysic of Aristotle.—iv.’ [Potential and actual reality. To explain experience, we must grant the distinction of potential and actual reality. The relation between the two is found by way of a consideration of the ‘possible’. The potential is persistent tendency towards the actual. In knowledge, in time, and in substance, the actual is prior to the potential. iv. The divine reason. While there is, within the sphere of the sensible or transitory, a continual process, the process is not self-explaining. A true cause must exist as self-dependent, and must express itself (or be actually originative). But it must not lose itself in expression; it must be eternally self-manifesting and self-identical. Aristotle finds it in the divine reason. “God . . . is eternal, unchangeable, self-dependent, self-originative, self-knowing and immaterial, the first and final cause of the whole process of the universe.”] **C. M. Bakewell.** ‘Pluralism and the Credentials of Monism.’ [A rambling essay, whose thesis is that “we would (*sic*) like to be pluralists, if only we could at the same time satisfy the imperious claims of reason,” and which concludes that “the world must be conceived as altogether coherent and interdependent in so far as free individuals do not freely act in it. Such individuals must, however, be conceived as capable of so acting, capable of interrupting sequences, of changing the history of the world—at least to some extent.”] **A. H. Lloyd.** ‘Epistemology and Physical Science: a Fatal Parallelism.’ [Epistemology is separated from the physical sciences by the dualism of mind and matter. But it retains the same dualism within itself, in the opposition of subject and object, thinker and thought. And the sciences do the same thing: chemistry, in its conserved matter and atoms; physics, in its matter as medium and moving particles; mathematics, with infinite quantity and finite quantities. The cure is that all alike cease “to divorce form from content.”] **W. G. Everett.** ‘The Evaluation of Life.’ [The worth of life is ultimately measured in terms of affective process. At the same time, “over against the peculiarly subjective and passive element of feeling, in which all experience is *evaluated* as good or evil, must be placed the objective and active phase of conscious life, by which all experiences are *constituted* good or evil”. Critique of Alexander and Schiller.] Discussions. **J. E. Russell** and **J. H. Tufts.** ‘Epistemology and Mental States.’ Reviews of Books. Summaries of Articles. Notices of New Books. Notes. Vol. vii., No. 5. **E. B. Titchener.** ‘The Postulates of a Structural Psychology.’ [The three psychologies, structural, functional and genetic, and their distribution in modern literature. Postulates of an anatomical psychology are the processes sensation, idea, affection, and the attributes quality, intensity, duration, extension, clearness. Brentano, James, Stout, as psychologists of function.] **A. K. Rogers.** ‘Epistemology and Experience.’ [To the Hegelian position that “reality is experience and that all the categories of reality are distinctions within the process of experience” the author opposes the

view that "reality is definite, concrete experience ; not experience, *i.e.*, but experiences. . . To say that all these experiences are brought together in the unity of experience is either to make experience perfectly abstract or else it is simply an act of philosophic faith." Reality being given, in type, in conscious activity, thought is real (or is a representation of reality) only as it is a reproduction of concrete activity. The process of judgment is analysed on the basis of this (Dewey's) theory, with especial reference to Bradley.] **E. A. Singer.** 'Sensation and the Datum of Science.' [Science is usually spoken of as constructing a world from the given : let us ask the counter-question, and try to construct the 'given' from the 'world'. Various claimants appear; sensation is a typical one. Examination shows, however, that it does not and cannot stand for an immediate datum of experience. Moreover, logical analysis of the problem proves that the current method of search leads to meaningless results. The key to the situation lies in 'reconstruction'. "The starting-point for reconstruction we must indeed have ; but it is no simple datum for construction."] **W. G. Everett.** 'The Concept of the Good.' [The Good is at once happiness and perfection : happiness, as 'subjective, affective, evaluative,' perfection, in its 'objective, ideational, constitutive aspect'. That there is no conflict is shown (1) by the verdict of experience that the 'higher' pleasures are quantitatively greater than the 'lower' ; (2) by the two-sidedness of motivation of conduct ; and (3) by the appeal made to the two faces of the concept in deciding between certain alternatives of action. The only unity for the double-aspect good is the concrete moral personality, *i.e.*, the very material which is to be analysed by moral science. Hence the 'dualism' is a dualism of facts directly and organically interrelated.] Discussion. **G. H. Howison.** 'The Real Issue in "The Conception of God"'. [Against Royce. The author holds that "the world of truth [truth of fact and law as well as of value and conduct] springs . . . from the world of self-active intelligences ; presupposes and in its wholeness *is* a plurality of such strictly free minds, and cannot be contained in the unity of any single consciousness". Royce maintains the antithesis.] Reviews of Books. Summaries of Articles. Notices of New Books. Notes.

PSYCHOLOGICAL REVIEW. Vol. v., No. 5. **M. W. Calkins.** 'Short Studies in Memory and in Association from the Wellesley College Psychological Laboratory.' [(1) Immediate and delayed recall of the concrete and the verbal. The author finds, as Kirkpatrick found, that the concrete is the better memory material, especially in delayed recall. 'Recalled' and 'recalled in order' give different values. (2) Tendency to mental combinations. A general characteristic, occurring with visual and auditory, verbal and concrete stimuli. Words combine better than pictures. (3) Associations with childhood experience. As against Galton's 39 per cent. childhood and 15 per cent. recent associations, students give 15 and 33 per cent., old and middle-aged persons 33 and 31 per cent.]

R. Macdougall. 'Music Imagery : a Confession of Experience.' [The writer, not a good visualiser, records a series of vivid images which occurred during the hearing of a musical composition while he was in a state of fatigue and relief from tension. The derivation of some of the figures is traceable, as is their suggestion at the time by the music. The fact emphasised is that here the mood (organic sensations) mediated the visual imagery.] **F. Kennedy.** 'On the Experimental Investigation of Memory.' [A useful résumé and bibliography of the experimental work on memory, with indication of lacunæ.] Discussion and Reports. **H. Muensterberg.** 'Psychology and Education.' [Reply to Cattell.] **C. L. Franklin.** 'The New Cases of Total Colour Blindness.' [On Hess

and Hering, *Pfl. Arch.*, lxxi.] **G. V. Dearborn.** 'The Criteria of Mental Abnormality.' [“Neither anatomical nor physiological nor psychological nor yet personal, in a sense, is the deranged person's defect [though some or all of these abnormalities are usually present], but it is *sociological* and against the evolving purpose of the race.”] **F. C. French.** 'The Place of Experimental Psychology in the Undergraduate Course.' Maintains, against Wolfe, that there is none.] Psychological Literature. New Books. Notes.

AMERICAN JOURNAL OF PSYCHOLOGY. Vol. ix., No. 4. **H. D. Sheldon.** 'The Institutional Activities of American Children.' [(1) Study of children's compositions on the topic of some society or club ; organising tendencies displayed ; boys' motives more primitive than girls' ; small part played by secrecy. (2) Reminiscent papers ; answers to questionnaire. Forms of play and organisation ; invention, leadership, discipline ; predatory associations. (3) Sketch of adult societies for children. (4) Bibliography of children's societies.] **J. O. Quantz.** 'Dendropsychoses.' [Study of the influence of trees on human life. Biological evidence. Psychical reverberations : witness of instinctive fears, of attitudes in sleep and methods of inducing sleep, of climbing instinct, of behaviour of idiots and criminals. Tree worship ; the life tree ; the world tree ; the paradise tree ; the tree in medicine ; the tree in child life and in poetry. “Man's arboreal life may have evolved certain intellectual and emotional characteristics, suggestions of which we still find” in these sources.] **N. Triplett.** 'The Dynamogenic Factors in Pacemaking and Competition.' [Theories of the faster time of paced and competition bicycle races. Apparatus for laboratory study of motor competition. Results : of those stimulated, some made faster time, others were inhibited. A few subjects were little affected by the race. Fluctuations of energy ; effect of age ; sex differences ; influences affecting time of succeeding trials. Effect of idea of movement on movement itself. General conclusion : “the bodily presence of another contestant,” the “sight of the movements of pacemakers or other competitors,” and the “idea of higher speed,” however furnished, are all dynamogenic factors of consequence.] **M. H. Carter.** 'Darwin's Idea of Mental Development.' [For Darwin, mind has a survival value ; by mind he meant, somewhat vaguely, intelligence, instinct and reflex action ; he regarded mind and brain as two distinct, interacting, interdependent realities ; he envisaged mental evolution as a progressive series of mutual (brain-mind and mind-brain) interdependencies. His position “may thus be summed up in three words, as *Cartesianism plus evolution*”. Bibliographies.] **G. M. Whipple.** 'The Influence of Forced Respiration on Psychical and Physical Activity.' [Maretz's apnoeic pause ; feeling of dizziness and confusion, sometimes followed by exhilaration ; greater strength of grip when breathing has returned to the normal. Rough tests—far too rough, in view of the appliances now available—show lengthened reaction, decreased memory span, loss of precision of movement, etc. ; but all these results must be retested.] **E. B. Delabarre.** 'A Method of Recording Eye-movements.' [Plaster cast of cornea, modelled on wire ring, to which writing lever is attached. Details of use and construction.—Very useful.] **E. B. Huey.** 'Preliminary Experiments in the Physiology and Psychology of Reading.' [Short words more quickly read in horizontal sequence, long in vertical. First part of words more important for recognition than last. Movements of eye in reading ; application of a device similar to that of Delabarre, and suggested by him and Ahrens.] **C. M. Hill.** 'On Choice.' [Experiments on ‘natural, physical choice’. It is natural to take the

nearer object, when no other considerations influence choice.] Psychological Literature. Correspondence. [C. E. Garman on the teaching of philosophy.] Books received. Index.

REVUE PHILOSOPHIQUE. October, 1898. **G. Tarde.** 'Qu'est-ce que le Crime?' [The author criticises and rejects as inadequate various definitions of crime which have already been offered. In his view crime is the violation of a right (divine, royal or collective) by a rebel and hostile will, which excites alarm and indignation in proportion respectively to the probability of its being imitated, and to the extent of dissent from established moral opinion on the part of the criminal which it exhibits.]

F. Le Dantec. 'Mimétisme et Imitation.' [Examines numerous cases of 'mimicry' and 'imitation' among animals, and concludes that many cases can be explained by the Lamarckian hypothesis better than by the Darwinian.] **J. Andrade.** 'Les Idées Directrices de la Mécanique.' [Mechanics rests on a metaphysical basis, *i.e.*, the majority of its fundamental concepts are denied *a priori* and not from experience. They are a means of interrogating experience, not an answer given by experience. Writer proceeds to prove his thesis by a detailed examination of the concepts in question.] Notes et discussions. Revue générale. Analyses et comptes rendus. November. **E. Murisier.** 'Le Sentiment Religieux dans l'Extase (I.)' [Religious ecstasy is an exaggeration of *individual* religious feeling as fanaticism is the exaggeration of *social* religious feeling. It has its roots in the desire for direction. Mysticism substitutes an '*idée directrice*' for all external direction. By this means a unification and simplification of the personality of the mystic is effected, yielding the quietude of ecstasy.] **F. Evellin et Z.** 'Philosophie et Mathématique. L'Infini Nouveau.' **E. Goblot.** 'Sur la Théorie Physiologique de l'Association.' [Writer defends the physiological theory of association, while denying that consciousness can be reduced to an epiphenomenon. Association must be carefully distinguished from memory, even in its simplest form of recognition. Essential to recognition is a 'judgment of pastness,' as a judgment of exteriority is essential to perception and of interiority to self-consciousness. Now all judgment is intellectual. The associative mechanism explains the givenness or non-givenness of a psychical state, but not the intellectual act of judging. "La machine cérébrale n'est pas une machine à penser mais une machine au service d'un esprit qui pense."] Revue générale. Analyses et comptes rendus. Revue des périodiques Étrangers. December.

F. Paulhan. 'Le Développement de l'Invention.' [I. As evolution. Two main types. The first may be compared to solving a problem. An end is chosen and is led up to by a process akin to reasoning, *e.g.*, E. A. Poe's 'Raven'; in the second we have a natural power working freely and spontaneously, *e.g.*, production of Mozart's compositions. II. As transformation, in which the original germ-idea in the course of its evolution gathers round it other elements, one or other of which gradually comes into conflict with the original idea and finally supplants it. III. As deviation, a combination of I. and II. In the course of evolution discordant elements develop and persist alongside of those which are germane to the subject.] **Murisier.** 'Le Sentiment Religieux dans l'Extase (Fin).' [An analysis of the state of mind induced by religious exercises shows that asceticism is valuable as a means to the mono-ideism in which the state of ecstasy consists. In extreme cases, however, the idea disappears and consciousness seems reduced to a condition of pure feeling. Finally even feeling vanishes and a state of indifference supervenes.] **Lévy-Bruhl.** 'A. Comte et Stuart Mill d'après leur correspondance.' Revue générale. Analyses et comptes rendus. Revue des périodiques Étrangers.

REVUE NÉO-SCOLASTIQUE. No. 18. **V. Ermoni** ('Le Thomisme et les Résultats de la psychologie expérimentale') maintains that while, on the one hand, ultra-spiritualism fails to account for cerebral phenomena, materialism, on the other, is in evident conflict with the phenomena of thought and consciousness; that, in consequence, for ultra-spiritualism there can be no physiology, and for materialism there can be no psychology. The theory of St. Thomas on the reciprocal relations of body and soul, standing midway between these two opposing systems, takes into full account both the elements of our nature, and forms a complete anthropology, uniting in one harmonious synthesis, which is justified by the most recent discoveries of experimental science, physiology and psychology. **E. Pasquier** ('Les hypothèses cosmogoniques,' suite), continuing his series of articles on the formation of the orderly universe, explains the hypothesis of Laplace, and discusses the chief objections advanced by Faye against this hypothesis, together with the reply of Wolf to Faye's objections. **M. de Wulf** ('Qu'est-ce que la philosophie scolaistique'), criticises the false and incomplete notions of scholastic philosophy now current. Some of these are merely verbal or even tautological; others are absolutely untrue. To say that scholastic philosophy was the philosophy of the Middle Ages will not satisfy M. de Wulf. Many systems of philosophy existed in the Middle Ages besides the scholastic, although it be undoubtedly true that the scholastic was the dominant system of that period. In future articles M. de Wulf will explain the true nature of scholastic philosophy, and attempt its suitable definition. **C. Besse** ('Leon Ollé-Laprune') commences an appreciation of the philosophical standpoint of Ollé-Laprune with special reference to its bearing on the problems of religion and life. He discusses at some length the attitude of Ollé-Laprune towards the system of Malebranche. **D. Nys** ('La Nature du composé chimique'), assuming that chemical compositions supply material for metaphysical as well as scientific investigations, sets forth the theories of St. Thomas on the subject, and maintains that there is nothing in modern science at variance with these theories. **D. Mercier** ('La psychologie de Descartes,' suite et fin) brings to a conclusion his interesting and able criticisms of Descartes' psychology.

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. Bd. xviii., Heft 1, 2. **F. Schumann.** 'Zur Schaetzung leerer, von einfachen Schalleindruecken begrenzter Zeiten.' [Restatement of the author's theory of the 'time sense,' in terms of strain of expectation and sensible surprise. Reply to Meumann (nine arguments), Wundt and Kuelpe: the general objections to the writer's theory appear to stand, the detailed objections to have had for the most part something in them,—though Meumann's tone is inexcusable. New results: (1) evidence for the theory from Herbart and from various subjects; (2) effect of an unexpectedly strong signal; "with subjects whose estimation depends upon adjustment of attention, intensification of the third signal means shortening of the second interval, while with subjects who tend to rhythmical apprehension [as Meumann's did] it brings about a lengthening of this interval"; (3) the constant time error, as dependent on adjustment of attention, rhythmical apprehension, or motor automatism; (4) Meumann's statement that a long series of sounds appears to run more quickly than a succession of two or three is confirmed only when there is lapse of attention during the long series, when, i.e., the subject cannot 'expect' its individual members; (5) his statement that a strongly bounded 'least' interval seems shorter than an equal but weakly bounded interval is not confirmed.] **W. Wirth.** 'Vorstellungs-

und Gefuehlscontrast.' [The 'law' of contrast in Hoeffding, Wundt, Fechner, etc., demands a detailed examination. (1) *Perceptual contrast*. Sense contrasts obtain only in the sphere of vision; their explanation is physiological. Perceptual contrast is due to the departure of a perception from the mean of experience; this produces a 'contrast feeling,' of surprise or disappointment, which is added to the (unaltered) perceptual contents. Apparent exceptions are accounted for by modification of memory-images. (2) *Affective contrast as co-ordinate with colour contrast*. Critique of Hoeffding. (3) *Affective and perceptual contrast*. Feeling, as subjective, cannot 'seem' to be weaker or stronger, as objective perceptions can; and, dependent as it is on the total mental state, cannot come into conflict with a pre-existent feeling-tendency. The introduction of secondary feelings, resulting from the effort after feeling, gives no assistance towards the explanation of affective contrast. But when perceptions contrast, the contrast feeling arises: and this is a special case of affective contrast at large. When our attention is on the objects, we speak of perceptual contrast; when the contrasting objects are so related as to arouse strong feelings of opposite quality, of affective: there are all stages.] **W. von Zehender.** 'Ueber die Entstehung des Raumbegriffes.' [The ideas of space, time and God are, in germ, *a priori* in human nature; but experience, outer and inner, is necessary to their realisation.] **K. Ebhardt.** 'Zwei Beitraege zur Psychologie des Rhythmus und des Tempo.' [(1) If taps are made, or tones played, in unaccented series, we find the duration of the intervals subject to a variable error. Accentuation (rhythm) increases this variable, and introduces a constant error: the interval following an accent is made longer than that preceding. Explanation (for bimembral and trimembral rhythms) in terms of motor adjustment, change of direction of attention, composition and analysis of groups, and (in the tonal series) affective value. (2) Compositions are played on a soundless keyboard most slowly; next most slowly, on the piano without accompaniment; most quickly on the piano with both hands. Explanation in terms of amount of mental work involved (reproduction), and of relative speed of arousal of expected feelings.] Literaturbericht. Bd. xviii., Heft 3. **O. Abraham** und **L. J. Bruehl.** 'Wahrnehmung kuerzester Toene und Geraeusche.' [A series of siren experiments, notable for their range (contra to middle of c^4 octave) and for the fact that the subject is possessed of a reliable 'absolute' tonal memory, gives the result that two vibrations suffice for a tone sensation and judgment of absolute pitch. From the g^4 to the a^5 the number of vibrations rises to ten. The absolutely least time (g^4) is 0.63σ . The 'clap' that results from the blowing of a single hole of the siren disc is a complex noise, conditioned by the primary wave, the distance of points of reflexion, and the periods of the after-vibrations.] **K. Deffner.** 'Die Aehnlichkeits-association.' [The two types of association: the original, by similarity; and the acquired, by 'experience' or contiguity. Critique of Hoeffding and Kuelpe. Similarity may obtain between conscious contents (two colours), or between the unconscious processes underlying these ('deep' tone and 'deep' colour). Exposition of this (Lipps') doctrine of association, with special reference to musical tones.—The most convincing part of the discussion is, perhaps, the criticism of Kuelpe's association by feeling. Wundt's *Bemerkungen* should have been taken account of.] Literaturbericht. Bd. xviii., Heft 4. **H. Voeste.** 'Messende Versuche ueber die Qualitaetsaenderungen der Spektralfarben in Folge von Ermuedung der Netzhaut' [Stimulation for ten sec. From red to $570\mu\mu$, the colour shifts towards violet; at $560\mu\mu$ there is no change; thence to $500\mu\mu$.

the colour shifts towards red; from 490 to 460 $\mu\mu$ there is no change; beyond 460 $\mu\mu$ the colour again shifts redwards. The degree of qualitative change is not proportional to intensity of stimulus. Theory follows in a later paper.] **G. J. Schoute.** 'Abnorme Augenstellung bei exzentrisch gelegener Pupille.' [Description of case; explanation and measurement of anomaly.]

M. Meyer. 'Nachtrag zu meiner Abhandlung. "Ueber Tonverschmelzung und die Theorie der Consonanz." ' **C. Stumpf.** 'Erwiderung.' [Continuation of controversy. Stumpf holds that clang analysis is rendered more or less difficult, according to conditions, by consonance; Meyer that unmusical persons are readier to say 'one tone' when the impression of consonance is present than when it is absent. No new facts are alleged.] Litteraturbericht. Bd. xviii., Heft 5 und 6. **C. Stumpf** und **M. Meyer.** 'Maassbestimmungen ueber die Reinheit consonanter Intervalle.' [Desiderata: experiments with successive tones, in ascending and descending order; with simultaneous tones; with simple tones and clangs. Previous Literature. Chapters i., ii. (S.), Experiments with the major and minor third. Chapter iii. (M.), Experiments with major third, fifth and octave. Chapter iv. (S. and M.), Uniformities in the results of these last experiments. Chapter v. (S.), Comparison of the new with older results. Contains a severe criticism of Schischmanow. Chapter vi. (S.), Remarks of the subjects during the experiments. Chapter vii. (S.), Explanations. (1) The judgment of purity is based upon a 'feeling for purity,' or rather a 'feeling for impurity'. With augmented intervals there is a feeling of strain, of sharpness; with diminished, a feeling of bluntness, dullness, flatness. The feeling is now primary, the judgment secondary; phylogenetically, a judgment of deviation from degree of fusion is primary. (2) Impurity can be cognised earlier than its direction; evidently, since the unpleasant feeling is common to both directions. (3) The major third is augmented, the minor diminished, in judgments of subjective purity. The reason is the æsthetic need of expression, of emphasising the characteristic. (4) Fifths and, still more, octaves, are similarly augmented; especially in ascending succession. The reason is that the energy of progression is thereby emphasised. From successive, this augmentation has passed over to simultaneous tones. (5) Succession is better than simultaneity for judgments of purity, because these judgments depend on feeling; simultaneity reduces distinctness (fusion), and so obstructs the judgment. (6) Clangs rich in overtones give uncertain judgments of purity. This is strange only to those who hold Helmholtz's theory of consonance. (7) The fifth has the advantage over other intervals in these judgments; the rest stand on the same level. The current belief to the contrary is rooted in speculation, not in fact.] **T. Lips.** 'Raumaesthetik und geometrisch-optische Taeuschungen, I.' [Elaborate reply to Heyman's criticism.] Besprechung. [Martius on Jodl's Lehrbuch.] Litteraturbericht.

PHILOSOPHISCHE STUDIEN. Bd. xiv., Heft 3. **H. Bruns.** 'Zur Collectiv-Masslehre.' [Presents and gives numerical tables for an improved method of investigating collective objects (Fechner).] **K. Marbe.** 'Die stroboskopischen Erscheinungen.' [Historical: the invention of the stroboscope; Fischer's investigation and its results (1886). Derivation of the laws of stroboscopy from Talbot's law. Restatement of the author's theory of this law, and critique of Witasek (Weber's law may be employed as explanatory principle) and of Fick and Schenck (eye-movement theory untenable).] **R. Mueller.** 'Ueber Raumwahrnehmung beim monocularen indirecten Sehen.' [Historical: Descartes to Wundt; Kirschmann's hypothesis of the function of dispersion circles (parallax of indirect vision). Experiments with falling balls (black and white, seen

against a grey background). Control experiments with exclusion of accommodation (use of atropin and eserine). In both sets, the monocularly perceived impressions were not spatially discriminated, but referred to a surface at a distance of some 190 cm. from the eye. Theory: moments in the monocular perception of depth: reference to von Recklinghausen's normal surface (formed by lines of intersection of identical planes of direction); lower of two vertical double images seems nearer and smaller, in obedience to the empirical constraint of the horopter; accommodation alone is sufficient for localisation; Boettcher's observation of the stability of the vertical after torsion; the relation of dispersion images to irradiation, size of pupil, closure of lids, regular astigmatism, 'experience,' 'psychical suppression'. Conclusion: the "dispersion circles are not directly perceived, and may yet be of prime importance for the act of perception". "The sole function of the images of indirect vision is to release sharply defined movement-impulses." "Monocular space perception exists; but the motives (exposed by these experiments) are originally those of the binocular act of vision."] **R. Schulze.** 'Ueber Klanganalyse.' [Experiments of 1891-3 (Wundt, *Phys. Psych.*, 4te., Aufl. i., 451). Every individual has a normal overtone-clang, which is difficult of analysis. A given compound clang is analysable in proportion as it varies from the normal clang. Corollaries are: the higher an interval in the tonal scale, and the wider apart the components of an interval, given identity of musical relationship, the easier is its analysis. Under right conditions, small intervals are less readily analysed than large; this is in accord with Helmholtz' theory. Hypothesis of analysis by resolution into a succession of tones, no more than one to two vibrations being necessary for the characterisation of pitch.]

VIERTELJAHRSSCHRIFT FÜR WISSENSCHAFTLICHE PHILOSOPHIE. Jahrg. xxii., Heft 4. **R. v. Schubert Soldern.** 'Ueber das Unbewusste im Bewusstsein.' [Unconscious must always be taken to mean *relatively unconscious*, viz., unconscious in relation to some higher mode of consciousness. Four kinds of unconsciousness are distinguished from this point of view.] **R. Eisler.** 'Ueber Ursprung und Wesen des Glaubens an die Existenz der Aussenwelt.' [External things are unified groups of qualities. Their externality consists in their independence of a percipient subject. They are "transcendent" only in so far as they comprehend qualities not immediately perceived, but ideally reinstated from previous experience. We regard external things as existing during the intervals of perception by an interpretation based on analogy to our own persistence as conscious beings.] Besprechung, etc.

ARCHIV FÜR SYSTEMATISCHE PHILOSOPHIE. Band iv., Heft 4. **J. Bergmann.** 'Seele und Leib (1).' [This first article deals with the general nature of soul on the one hand, and of material substances on the other.] **P. J. Helwig.** 'Die combinatorisch-ästhetische Funktion und die Formeln der symbolischen Logik.' *Jahresbericht ueber die Erscheinungen auf dem Gebiete der systematischen Philosophie*: **T. Lips.** 'Dritter ästhetischer Litteraturbericht (1).' **F. Tönnies.** 'Jahresbericht ueber Erscheinungen der Sociologie aus den Jahren 1895 und 1896.' **V. Brochard.** 'Compte-rendu des ouvrages philosophiques publiés en France pendant l'année 1896.' Zeitschriften, etc.

PHILOSOPHISCHES JAHRBUCH. Bd. xi., Heft 2. **C. Gutberlet.** 'Die Krisis in der Psychologie.' [This second article, whilst recognising the merits of Fechner, Lotze and Wundt in experimental psychology, complains that Empiricism, now excluding and now using metaphysical reasoning, has destroyed the value of their researches. Fechner's law itself is a great 'sea-serpent'. The writer concludes by protesting

against the tendency to reduce Logic, Mathematics, Aesthetics and Ethics to Psychology, and to attempt pure experimental Psychology without metaphysic. Such a tendency is fatal to Philosophy.] **A. Seitz.** 'Zusammenhang des Leibniz'schen Monadensystems mit dem Determinismus.' [This paper, after showing the historical evolution of Leibniz' monad-system, compares his 'prestabilished harmony' with the theory of predetermination of the human will, moved by the First Cause, and shows that the former contains the latter which amounts to Determinism. Leibniz was much influenced by the system of Jansenius, but confined himself to the philosophical side of the question without entering into its theological conclusions as concerns grace.] **E. Dentler.** 'Der Noës nach Anaxagoras.' [Having pointed out in a preceding article that, according to Anaxagoras, the Noës is intellect and power, the writer examines whether he ascribes to it absolute incorporeity and personality. Windelband, Gomperz, Kern and others deny it. Zeller, Freudenthal, Heinze and Arleth affirm it. From fragments of the philosopher's works, and quotations from Aristotle and Plato, it seems certain that the Noës is absolutely incorporeal. As to its personality, infinite intelligence of all things implies self-consciousness; its immanence in all beings would indeed contradict personality, but it is likely that Anaxagoras did not see the contradiction.] **C. Baeumker.** 'Herr Fr. Gundisal Feldner und mein Problem der Materie in der griechischen Philosophie.' [This is a controversial article in which the writer protests against an attack upon his book. He is condemned for what he has not said in a book which his critic has not understood; he also complains of his assailant's want of courtesy.]

RIVISTA ITALIANA DI FILOSOFIA. March-April. **A. Chiappelli ed. L. Serin.** 'Una recente Scoperta fatta presso Pompei d'un Musaico rappresentante "La Scuola d'Atene"?' [A translation of an article which appeared recently in the *Archiv für Geschichte der Philosophie*. To the translation an appendix is added by Sig. Chiappelli, dated June last, in which he adduces additional evidence in confirmation of the identification of the figures appearing in the mosaic.] **V. Berini.** 'La memoria e la Durata dei Sogni.' [A discussion of the views of Bonatelli, Goblot, Tissié, G. Dandolo and Maury upon the recollection of dreams. The author is inclined to think that dreams nearest in point of time, and in general coherency, to waking, are most easily recalled. The duration and measure of time in dreaming are also discussed.] **A. Codara.** 'Seneca Filosofo e S. Paolo. [Conclusion.]' **L. F. Ardy.** 'Dante e La Moderna Filosofia Sociale.' [Dante's point of view with regard to Social Philosophy necessarily differed from the modern one. In his writings, he is deeply impressed by the prevalent social "decadence" of his own day, which he viewed in close connexion with its ethical root and, from the religious cast of his mind, attributed to the castigation of Providence. Therefore the remedies for the ills of the state consisted in the cultivation of religion, virtue, and wisdom (*to be continued*)]. **G. Passamanti.** 'Giovanni Battista Benedetti.' **G. Marchesini.** 'Oggetto e Sogetto della Sensazione.' Bollettino. Rivista Straniere, etc.